MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

EDITED BY

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PSYCHOLOGY AND PHILOSOPHY

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I.—SOME INCOHERENCIES IN SPINOZISM (II.).

BY A. E. TAYLOR.

HITHERTO I have in effect been arguing that Spinozism can produce no intelligible theory of natural knowledge, because by ignoring the *concipient*, it has made its "mind" into one which may be called a theatre of "psychical occurrences," but really *knows* nothing.   I want now to contend that the system, if consistent, is precluded from having any genuinely ethical doctrine at all by its proposed exclusion of the notion of moral value.   The exclusion is explicitly accomplished in the famous *Preface* to Pt. III., where Spinoza compliments himself on his superiority to the common run of moralists, who are accustomed to praise or condemn human "affects" and human actions, and announces his intention to consider the subject-matter as indifferently as though it were that of geometry, "lines, planes, solids".   The words might be harmless if their purpose were merely to censure the pulpit-eloquence into which the treatment of ethics may degenerate in the hands of third-rate writers. But Spinoza means a great deal more than this.   The "prejudice" from which he proposes to show himself free is, as he candidly admits, that of believing in any objectively valid standard of values at all (III. 39 schol.), and the "geometrical" treatment of human passions and the acts to which they prompt is intended

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to mean a merely naturalistic psychological account of the way in which the various " passions " are generated and the kind of acts to which they lead. The declaration of the *Preface* prepares us for the subsequent enunciation of the proposition that " we do not desire a thing because it is good ; it is good because we desire it," *i.e.*, *good* is only a name for whatever is in fact desired by the person using the word.

It ought to be obvious that on such an assumption neither a moral code nor a philosophy of morals is possible. Both are possible only on the presupposition that it is possible to pronounce on the *worth* of different human passions and desires by reference to a standard independent of the passions and desires to which it is applied, just as Mill's insistence on a difference of *worth* among pleasures was only possible to Mill because in his heart he did not believe, as his exaggerated reverence for Bentham and his own father led him to imagine he believed, that pleasurableness and goodness are the same thing. I am not here denying that the great Greek tradition, according to which all of us, at the bottom of our hearts, have an inextinguishable desire for the ' true good ', is sound ; in fact I am prepared to maintain the view myself, with the necessary explanations. But if we are to hold such a view, we must also be prepared to say that most men do not know what it is that they are really desiring, that the things they spend their lives in pursuing prove to be really *not* what they desired. For what they pursue is, to speak with Aristotle, the ' apparent good ', and the ' apparent good ' and the good are commonly different things. Hence it would be in principle impossible to Plato or Aristotle, as much as it would be to a ' deontologist ' like Kant, to grant that the good is not pursued because it is good, but is good because it is desired, or that ' this is good ' *means* that this is being actually pursued. And the much admired proposal to treat moral actions exactly as though they were geometrical figures is really ridiculous. It is to ignore their specific character as *moral*. To construct a morality from which the distinctions of the objectively good and evil, right and wrong, are absent, is like proposing to construct a geometry superior to the ' vulgar prejudice ' that there is a distinction between straight and curved.

This is really the central point at issue in Spinoza's correspondence with William Blyenbergh, and it is not to the credit of the exponents of Spinozism that it should have been left to Prof. Guzzo to point out that, though the worthy merchant was, as he said, a tyro in metaphysics, his main ethical contention is absolutely sound. When we divest the debate between the

correspondents of terminology borrowed from a now obsolete Calvinistic theology, the question is simply this. Spinoza himself, let us say, is what we commonly call a morally good man, Nero or Cesare Borgia a very bad one. But is there any real distinction between these men which corresponds to the verbal distinction we have just drawn ? Clearly not, if we are to stand by the principles laid down in the *Preface* to *Pt.* III. Spinoza, Nero, Borgia, each has his characteristic individual *natura*, and can have no other, and the life of each of them is a *conatus* to preserve this *natura* and assert it against opposition. Their *naturae* are different, no doubt, but only as the curvature of one circle is different from that of another circle of different radius ; or perhaps, in view of the inconsistencies of human action, it would be better to say, as the curvatures of one ellipse are from those of another of different eccentricity. In this there is no more ground for asserting the *moral* superiority of one of the three men to another than there would be for discriminating between the moral worth of one circle or ellipse and that of another. It is true, no doubt, that *I* might find the existence of Spinoza in the circle of my associates of high advantage to me, and that of Nero or Borgia a menace or a nuisance. But this is a purely extrinsic denomination, and, in point of fact, if Nero is a nuisance to me, to another man he might be a convenience, and Spinoza the nuisance.[1] The accidental circumstance that I find Nero or Borgia the nuisance is assuredly not what I mean, truly or falsely, to assert when I call them bad men.

Yet it is all the difference Spinoza can allow to be real, and for that reason he has to explain in so many words that he regards the distinctively ethical notions of *merit* and *demerit* as baseless, and elsewhere to justify the punishment of criminals as being exactly on a par with the shooting of a rabid dog or the killing of a venomous snake. In the matter of the administration of criminal justice *his* morality will literally ' treat a man like a dog ', a procedure which has always been held to be morally particularly objectionable. May we not retort on this that no one who does not understand that even a murderer is a man to whom we have obligations, and not a dangerous animal, should pretend to have a *moral* theory ? [2]

[1] Nero was an advantage to Poppaea ; she would probably have found the company of Spinoza a nuisance.

[2] In the correspondence with Blyenbergh Spinoza ends by fairly involving himself in a formal contradiction. In *Ep.* 19 he had laid it down that, though the *improbi* are fulfilling the ' will of God ' by their misdeeds no less than the *probi* by right action, the difference remains that the *improbi* are the less " perfect ". *I.e.*, the world is really and objectively

The point comes out with particular distinctness in the final exchanges between the disputants. Blyenbergh had asked, ' why, on your principles, should you not commit the actions of a Nero ' ? and had received the answer (*Ep.*, 21) ' because they do not agree with my particular nature, exactly as I abstain from certain dishes becauses they do not agree with my digestion '. To which he replies (*Ep.*, 23) ' a man who *only* abstains from crimes because they disagree with his particular nature cannot plume himself on his virtue '. And the reply is really fully justified. A man who refused an unwholesome dish merely because its flavour had no attraction for him could not, of course, claim to be showing himself properly attentive to dietetics, for, if his *only* reason for abstinence were the one he gives, it follows that if he had happened to like the flavour, he would have eaten the unwholesome thing for all its unwholesomeness. It is equally true that no man shows himself to be particularly virtuous by not committing sins which have no attraction for him ; where I *prove* my virtue is in resisting the temptations which *do* appeal to me. A decent man does not want to commit acts of license, for example, but even if he did feel a keen desire to commit them, he would refuse to do so ; his reason for avoiding vice is not merely that he in particular has no taste for it, but that it is doing what is *evil* or wrong. There can be no moral philosophy at all if the distinction between right and wrong can be reduced to one between what does in fact attract a certain man, or type of man, and what repels him. From premises which state mere non-moral ' matters of fact and relations between them ', you cannot deduce ethical conclusions. On this point Blyenbergh, crudely as he puts the matter, and influenced as he probably was by the anxiety to provide a hell after death for sinners, was simply right.

a *hierarchized* world. In 21 he goes on to explain the statement by saying that the proper method of estimation in every case is to judge by the *quality of the deed alone* (*ex operis qualitate, non vero expotentia operatoris*). That is, an *act* of justice, as such, has a higher " perfection " than a theft, and *therefore* we pronounce the honest man " more perfect ", and so better than the thief. But in the very next letter (*Ep.* 22) this position is reversed, and we are told that if we regard only their *opera*, a just man and a thief are *equally* " perfect ". I do not know a better example of the ' circle ' which Kant says is unavoidable in a " perfectionist " doctrine of morals. The thief is first declared to be the worse man because his act is the less perfect ; then we are told that the thief's act is only to be called " less perfect " because the agent is a worse man.

The argument about the rabid creature (I think it means really rather a *man* suffering from the bite of a rabid dog than the dog itself) will be found in *Ep.* 78 (to Oldenburg).

In fact, Blyenbergh is really putting in a crude way the very objection which Kant was afterwards to urge against ' Perfectionism '. Presumably it is Leibniz rather than Spinoza, whom he seems never to have read, whom Kant actually has in mind here, but his criticism is really more directly effectual against Spinoza. He urges that if Perfectionism is to work, it will have to presuppose the very principle (that of the distinction between right and wrong) which it pretends to explain, and is thus committed to reasoning in a circle.

This is exactly true of Spinoza. He professes to explain our moral distinction between the good act or man and the bad one by reducing it to a difference in degree of *realitas* or *entitas*. (It is not clear to me how such degrees are supposed to be measured, but I presume he, like Descartes, would have said that A has more *realitas* than B if the number of positive predicates which can be ascribed to A is greater than that assignable to B.) But how does he know that a morally good man *has* more *realitas* than a morally bad one ? In what respect is the ' finite mode ' of God which we call the Apostle Paul more *real* than that other ' finite mode ' which we call the Emperor Nero ? *Plato* might have replied that the one is ' more *like* God ' than the other, but to say this would be to fall into the anthropomorphism Spinoza is most anxious to avoid. There can be no likeness, near or remote, between the mode and the infinite substance. If you equivocate on the word *perfect*, and argue that the good man is ' morally more perfect ' than the bad, and *therefore* has more *realitas*, you are, as Kant said, presupposing as an independent given the very moral distinction you are pretending to explain.[1]

The best defence of Spinozism in this matter that occurs to me is to say that Spinoza's ideally virtuous man is supposed, as we see from *Pt.* V., to have a wider range of insight than other men into the universal order and concatenation of things, and that thus we might say his *intellectus* is at any rate more like the

[1] Or it would be pertinent to say that Spinoza's reasoning entirely overlooks that ambiguity of the words *nature, natural* rightly insisted on by Butler. No doubt, since Spinoza does not, like Nero or Orestes, commit matricide, there is *something* in the ' particular nature ' of Spinoza to which matricide is distasteful. But for the moralist the all-important question is what this something is. Is it a mere ' idiosyncrasy ', like a disrelish for tobacco or port wine, or is it ' conscience ' with its universality and its ' manifest authority ' ? Is matricide to be avoided because $A B$ has no taste for it, or because it is ' contrary to the nature of *man* as a *system* ' ? Unhappily Spinoza's nominalism—a relic of the decadence of scholasticism —requires him to deny that there *is* any ' nature of man '.

infinitus intellectus Dei than that of any one else.[1]   But it seems
to me a highly dubitable assumption that a man with an intellect
thus capacious might not be morally one of the worst of mankind.
I do not see why a great man of science, profoundly alive to the
concatenation of cause and effect throughout nature, might not
be morally a very bad man indeed, and it is quite certain that
a man who has never accustomed himself to think of the ' unity
of all nature ' and the universal *commercium* between all the con-
stituents of nature, may be morally exceptionally virtuous.
It seems to me, therefore, that Spinoza never succeeds in showing
any connection between *perfectio* (in the only sense in which he
professes to use the word) and *moral* perfection, and that if he
had attempted to show the connection (as it is vital to his way of
treating moral questions that he should) he would have had to
fall into the very fallacy which Kant was exposing. All that
really follows from his professed principles is that bad men are
psychologically *different* from good men, and that the exceptionally
bad man must be, judging from the standpoint of the average
human being, what one of Charles Lamb's friends used to call
atrocious murderers, ' highly eccentric '. But the *moral* dif-
ference between the two types is just the one difference Spinoza
(correctly on the principles of his *Preface*) refuses to allow, a
difference in *desert*.   It is in keeping with this that the very word
duty or *obligation* hardly occurs anywhere in the *Ethics*, and that,
though Spinoza had fine things to say about the virtue of
benevolence, he is curiously silent about the great virtue in which
the concept of a *debitum* is most markedly prominent, the virtue
of *justice*.   But I should say that there must clearly be something
wrong with the very foundations of a moral theory which can
be worked out without reference to justice and obligation.

    Even if these criticisms can be completely met, there remains
what seems to be an insuperable practical difficulty.   How, on
Spinoza's theory, does the transition from servitude to passion
into the ' freedom ' of action at the dictate of reason come about ?
This is really, at bottom, the same problem we met before when
we were considering the transition from *imaginatio* to *ratio*.
Antecedently we could suppose the process to take place in
either of two ways.   A man might undergo an intellectual
enlightenment, he might experience a ' day of Damascus ', when
he beheld for the first time with unclouded eyes the vision of the
true good, and this clarification of the intellect might effect a

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[1] Though this is a poor ' best ', since the *infinitus intellectus* is really only
a collective name for all the finite intellects there may happen to be (V. 40
Schol.).

liberation from the passions connected with illusion and inadequate thinking. The man might cease to care for his old false gods, because, in the light of the vision, he had seen them to be false. Or conceivably the change might be wrought from the other side. A man might pass through an emotional crisis, he might awaken to noble emotions to which he had been a stranger, and the purification of emotion might be supposed to have a clarification of the intellect as its effect. It was, as we know, in the first of these ways that Plato and his followers supposed ' conversion ' to be effected ; the ' eye of the soul ' was to be turned in the direction of the good. The memorable ' conversions ' in the history of Christianity have been largely of the second kind. My trouble with Spinoza is that he seems to block both routes. For he lays it down expressly that we are of necessity under the dominion of the passions so long as our ideas remain inadequate. We should expect him, then, to teach a doctrine of intellectual conversion, making escape from the passions consequent on the attainment of adequate ideas. But if he is to take that line consistently, he must be prepared to hold that truth, at least truth about the good, as truth, has an inherent attractive power which can master the emotions. Reason must be able to encounter and defeat the passions in its own strength. But (and here again the difficulty seems to have escaped most, if not all, the expositors except Guzzo) it is Spinoza himself who also says that a true and adequate idea has in itself no more hold over our ' passional nature ' than a false and inadequate one ; it can only prevail if it happens to be associated with a more powerful ' affect ' (IV. 7, IV. 14). Thus it seems in the end to be an accident, dependent on those circumstances of our environment which Spinoza tells us are, taken together, so much more powerful than ourselves, whether we ever escape out of our bondage or not, though the object of the whole *Ethics* has been to show us how we may compass our own deliverance.

Its promises, like the unerring prophecies of Tiresias, end in *quidquid dicam aut erit aut non.* If they really inspire hope in the reader, it is because he silently presupposes all the time that truth seen to be true has a compelling power due to its truth ; he fancies that illusions, once known for what they are, will lose their grasp on him just because " killing *Truth* " has " glared on them ". But this is just what his author maintains will not happen.

Thus the old question " what must I do to be saved ? " receives no answer. Or at least it only gets the unsatisfactory answer offered by Leibniz to readers frightened by *his* Pre-

destinationism into asking whether they may not be among the
predestined to damnation, ' As you don't know, you may as well
make the more agreeable guess that you are among the elect.'

When we turn, however, to the detailed teaching of *Pt.* V.
about the road which leads to ' freedom ' and life, Spinoza might
almost seem to have forgotten the emphatic declarations in
Pt. IV. upon which we have been remarking. For what are the
practical recommendations he sets before us ? They are, in
effect, that we should use our cool hours in meditating on the
inevitable necessity of the law of cause and effect, and the enor-
mous complication of the cause of every event, in virtue of which
the contribution of any one particular man or thing to our happi-
ness or misery may be considered infinitesimal. We are, in
fact, to remember two maxims, that nothing can possibly occur
except precisely as it does occur, and that it takes the whole of
the universe to cause any particular effect. Such meditation will,
in the end, liberate us from unreasonable passions. For such
passions are due to two concurrent delusions. We fancy that
the favours or the blows of fortune are dealt out with conscious
purpose, that there is ' some one ' who is at work to convenience
or to spite us in all that befalls us. And also, we wrongly single
out some one thing or person which, or who, has been merely
contributory, along with all other things or persons, to our ill
or good fortune, and make it or him the exclusive object of our
gratitude or resentment. The dissipation of these errors may be
expected to moderate our transports whether of love or of hate,
and to leave us with an equal mind, *in utramque sortem paratos.*

Now all this seems to take it for granted that the thoughts of
universal necessity and the thorough-going complication of
causes have, after all, only to be steadily entertained as truths,
and their very truth will make them victorious over the most
violent ' affects ', though we had been told in *Pt.* IV. that truth
can only win the day when it has a ' *stronger* affect ' for its ally.
I do not see how we can escape recognising a contradiction here,
for, on Spinoza's own showing, ' an affect towards an effect which
we regard as necessary is *ceteris paribus* not so strong as though
the effect were supposed free ' (III. 49). At least, then, though
the emotional moods evoked by the meditations recommended
may, by habitual practice, be made more *usual* with us than the
violent passions they are to subdue, they will not be made
' stronger ', and it was ' stronger affects ' which had been de-
clared in *Pt.* IV. to be necessary if the " passions " are to be
mastered. We may fairly say, I think, that if we accept Spinoza's
own reasoning, the effect of habitual meditation on the lines

recommended should not be to generate "stronger" rivals to the 'passions' which he desires to control, but rather to bring about a general deadening and flattening of the emotional life. Perpetual preoccupation with the thought, 'what has happened to me could not have been other than as it is, and no one and nothing in particular has had very much to do with it' is less likely to give rise to a *summa mentis acquiescentia* which can colourably be called a 'love of God' than to that dull and hopeless indifferent listlessness which the Middle Ages knew as *acedia* and recognised as a peculiarly 'deadly' sin. And the literary records of humanity seem to show that where the original 'passive affects' were really strong, or where they are reinforced by grievous external circumstances, meditation on the inevitable necessity of all that happens cannot be counted on to beget even indifference; it may arouse angry revolt against the whole scheme of things. The author of the *Shropshire Lad* gives every sign of being as convinced as Spinoza of the interconnection and iron necessity of all events, but the thought does not temper his resentful animosity against 'whatever brute or blackguard made the world'. Hardy, in *Tess of the Durbervilles*, constructs a train of events which is inevitably to lead his heroine to the gallows, but the inevitability does not prevent him from shaking his fist in the face of the 'President of the Immortals'; he is so transported by his 'affect' that he comically enough forgets that it was not God but Thomas Hardy who "made" Tess, and made her expressly for the purpose of getting her hanged.

It is true that Christians *have* been enabled to take the worst as well as the best the world has to bestow with *summa mentis acquiescentia*, but they have been able to do so precisely because of their belief, which Spinoza does not share, that if the course of all things has been predetermined, it has been predetermined for a good, though hidden, purpose by a Creator who is both wise and loving, and therefore there is ground for *gratitude* in all that befalls them. If they overcome the world, it is not in virtue of the mere belief in complete preordination which some of them have in common with Spinoza, but in virtue of what they add to this conviction, their belief that the preordination is purposeful, and that the purpose, when disclosed, will be seen to be good.

No one, I take it, doubts that Spinoza's own contemplation of the order of the universe brought him the serene and solemn joy which he describes; if he had not felt it in himself, he could not write of it as he does. But that the contemplation brought him that joy is only explicable if it included features which are not represented in his professed account of its object, *natura sive*

Deus, and never justified in his metaphysic. Like most of the rest of us, he had a religion which could not be decanted, without spilling, into any set of metaphysical formulæ. If you doubt this, imagine a perfectly possible situation, which has often enough been the actual situation of a British subject. ' Here am I, in prison, aching from the rack, and to-morrow I am to be taken out to be hanged, drawn, and quartered. What I have done to bring this on me, I do not know, but there is the fact; it cannot be altered, and nothing that I, or any one else could ever have done, could have made any difference to it. *Che sarà, sarà* '. What is there here to breed *acquiescentia mentis* in any child of man ?

Also, it ought not to be forgotten that, be they good or bad, the directions given us in the *Ethics* for the conduct of our meditations presuppose that very kind of freedom which Spinoza has repeatedly declared to be an illusion of ignorance. It is taken for granted that we can *at will* determine for ourselves what we will meditate upon, in what light we will consider the course of things,—or at least, that we can do so ' in a cool hour '. (In fact the same assumption had been made less obviously in *Pt.* II. in using the very word *dictamen*, with its suggestions of command and self-direction, to describe the deliverances of ' reason '.) But according to the teaching of the earlier parts of the *Ethics* a man has no power over the direction of his thoughts, in any hour, however ' cool '. My present thinking is a ' mode ' of God necessarily determined to be there, and to be what it is, by another earlier mode, itself similarly determined by a yet earlier mode, and so on in *indefinitum*. Nowhere in this chain of successive ' ideas ' do *I* appear as a being with any power whatever to deflect the succession from its predetermined course. Recommendations to practise meditation, such as Spinoza gives, would have been consistent enough in Descartes, because Descartes believed in a man's power of self-determination ; they are out of place in Spinozism, which allows of no such power. The only liberty Spinoza can consistently recognise is a mere matter of fact, the fact that some men are, though most men are not, superior to the ' passions '. But liberty as something which we as yet do not *possess* but may set ourselves to *acquire* by following certain precepts, is a matter not of fact, but of *right* (*ius*) ; whether it will be translated into actual fact or not depends on our observation or neglect of the precepts, and hence, unless the right is merely illusory, the very giving of the precepts presupposes that a potentiality not yet realised is not a mere nothing, and that the actualisation of *this* possibility of life free from the

tyranny of the passions depends on the *liberum arbitrum* of each of us. We can " make a right use of our presentations ", as the Stoic formula puts it, if we will.

It is, indeed, so manifest that ' free will ' is the *causa essendi* of the moral life and the moral law that no one, in all probability, would ever have disputed the fact but for the unlucky confusion of free will with a supposed ' motiveless choice between motives '. When I choose to do an act simply because I judge it right that it should be done and wrong that it should be left undone, I am not making a *motiveless* choice ; it is the rightness of the act (or, if you prefer to say so, the wrongness of leaving it undone) that is the motive influencing my decision. Unfortunately Spinozism, like all ' naturalistic ' doctrines of morals, cannot consistently admit determination by such a motive. The only determination it can admit is determination of a particular natural fact, or event, by others, which are in turn determined by yet others, and so on *in indefinitum*. And the rightness or wrongness of an act is not such a natural event, either in the series of modes of extension or in that of those of " thought ". In a world which is simply a complicated chain of events, or a number of such chains, and nothing more, there is no room for right and wrong themselves, and therefore, of course, no room for a choice of right simply as right.

That Spinoza himself was alive to this seems to be proved by his assertion that the true antithesis is not between *free* and *necessitated*, but between *free* and *fortuitous* (*Ep.* 56, cf. *Ep.* 58). His purpose is, of course, to make free action one special case of necessitated action, the case in which the necessitation arises not from without, but from the internal constitution of the agent. But the result of drawing the distinction in these terms is that one would have to class together as equally ' free ' acts which are done to gratify an overmastering passion (the very kind of acts from which the precepts of the *Ethics* are meant to deliver us) and acts which are done for the sake of their goodness or rightness. When a man has to say to himself, as the sole justification of his acts, *sit pro ratione voluntas*, he is exhibiting an example of the very thing which Spinoza himself calls *servitus humana ;* when he acts ' from the dictate of reason ' he is exemplifying *libertas*, but equally in both cases he acts *nullo cogente*. Yet morally the two actions are as far asunder as the poles, and this is why I believe that the mere description of man as an *automaton spirituale* will never satisfy any thinker who, like Kant, takes the moral law seriously. Any account of moral freedom which is to be

acceptable to any one who is at once clear-headed and in earnest about morality must somehow involve the recognition of *in-determination ; so far*, it seems to me, Descartes was manifestly in the right.

Where the indeterminist moralist is in danger of going wrong, I should say, is not in frankly treating indetermination as a fact, but in an elementary mistake about the nature of the fact. What is indispensable to ethics is that there should be for each of us a sphere—however hard it may be to specify its precise boundary —of *fully imputable* acts, and that, within that sphere, there should be no complete determination of any act by the series of past acts and past events ; whenever I do an act which is fully imputable to me, it remains undetermined which of the alternatives open to me will be adopted until *I* determine what I will do. My fully imputable actions are not even determined (*ad unum*) by past imputable acts ; they are, in the last resort, determined by me, and I am other than the series of my past acts. But this does not mean that I determine them without a *motive ;* motive-less willing is the merest fiction, the *motive* is the recognition of the act determined upon as ' best ', or as ' obligatory '. The libertarian who knows his business will not attempt to prove that the ' free choice ' has no motive, but he will insist on the radical distinction in character between determination by ' motives ' and the kind of determination by antecedent events, which is what is meant when we talk about ' causation ' in natural science. To say that I now do *A* rather than leave it undone *because* I now judge *A* to be what it is obligatory on me to do presupposes that, however narrowly my choice may be circumscribed as a consequence of the past, there really *is* now an open alternative before me ' to do *A* or to leave *A* undone ' ; which of the two lines of action shall be followed has *not* been settled by my past or by the past of the whole universe ; it is precisely what I have now to settle, and to settle for myself. It is only in the actions of persons that we meet with clear evidence of the reality of such a situation, and, as Kant saw, the only convincing evidence that we meet with it there is just our moral conviction of the *obligatoriness* of morally right action. No philosophy which begins by confusing a personal agent with the series of his acts, or, like Spinoza's, defines his mind as a ' complex idea ', can consistently recognise this evidence, and no such philosophy, therefore, can construct a genuine ethics without deserting its own professed principles, any more than Hobbes could succeed, on his professed principles, in establishing the proposition, which is vital to his whole moral doctrine, that

men absolutely ought ' to perform their covenants '.   For that reason it has long seemed to me that the real imperishable service of Kant to philosophy is to be looked for not in the confused and self-contradictory epistemology of the first *Critique*, but in his triumphant reassertion, against all the superficialities of the eighteenth century, of the significance and implications of the idea of moral obligation and his elucidation of the meaning of a good will.

It is said, of course, that so long as we remain at the level of obligation we are still concerned only with *mere* morality, and that the truly religious man has transcended all such *mere* morality. He has substituted the higher motive of love for that of cold duty.   Now I have no quarrel with the view that in a worthy religion morality is transfigured, and, if you like to say so, transcended.   But to transfigure morality is one thing, to ignore it quite another, and too much of the modern ' idealism ' which draws deeply upon at any rate *Pt.* V. of Spinoza's *Ethics* seems to me to be merely ignoring morality when it supposes itself to have transcended it.   It supposes itself to have risen above the ethical sphere by disparaging *Moralität* in favour of something which is called *Sittlichkeit*, but proves on examination to be no more than the apotheosis of the supreme Antichrist, the ' totalitarian State '.   ' Free conscience ', because not infallible, is vilified in the interests of the conscienceless will of a dictator or group of dictators, and thus we are left with an immoral ' morality ' and an ' idolatrous ' religion.

Spinoza was himself protected from excess of this kind by his personal sincere adherence to the principles of a free constitution ;   *he* was no worshipper of Napoleons.   But one can see the moral mischief beginning even in him when he tells us, for example, in the *Tractatus Theologico-Politicus* [1] that though forgiveness of injuries would be right in a state of nature, in civil society it becomes a ' pious ' act to prosecute any one who has ' taken my cloak ' even to death, if the State in which I live has provided ' hanging laws ' for the purpose.   The State is here beginning to usurp the place of common humanity, and I could wish that the philosopher could have profited by the indignant language in which Cromwell, in his own life-time, remonstrated with his Parliament on the barbarity of the contemporary laws of England.   It is worse still that, as we all know,

[1] C. 19, pium est ei qui mecum contendit, et meam tunicam vult capere, pallium etiam dare ; at ubi judicatur hoc reipublicae conservationi perniciosum esse, pium contra est eum in judicium vocare, *tametsi mortis damnandus sit.*

Spinoza should have openly proclaimed that any State may at any moment and without warning of any kind, violate all its most solemn engagements to another purely from consideration of its own convenience (*Tractatus Politicus c.* 3). I would commend the whole chapter of the *Tractatus Politicus* in which this State immoralism is inculcated to the serious meditations of any one who is tempted to hope much for mankind from a religion founded on an ' intellectual love of God ' which transcends moral obligation by simply ignoring it.

It is the more important not to lose sight of these deliverances because the stress laid in the *Ethics* on the thought that *homo* (so far as he is led by the ' dictate of reason ') is *homini deus* tends to make us forget that the *homines* who behave so handsomely to one another are, after all, only those who happen to be connected by common subjection to the same sovereign, they are *concives*, and according to Spinoza's own explanations, any man who is not my *concivis* is a *hostis* outside the sphere of rights. (*Tractatus Politicus, c.* 3, *homines enim in statu naturali hostes sunt ; qui igitur Jus Naturae extra civitatem retinent hostes manent.*) [1] As far as the words go, this is, to be sure, no more than the well-known doctrine of Hobbes. But there is the very real difference that Hobbes obstinately holds to his declaration that it is a ' law of nature ' that men perform their covenants, and that even in the ' state of nature ', this obligation is binding in *foro interno*, that is, it is a matter of conscience to *endeavour* to fulfil it, though not always binding *in foro externo* (not always to be acted on without qualification), whereas Spinoza simply ignores the obligation in *foro interno*. In practice this would work out to a real difference. Hobbes is only saying that where there is nothing but my own wit and my own arm to protect me, I must judge for myself whether the conduct of another justifies me in going back, for my own self-preservation, on a promise I have made, and this is no more than any moralist might concede in the case *e.g.* of a solitary Briton or Frenchman surrounded by a tribe of savages. A man in such a case must do for himself what he would not be entitled to do in a settled society, judge for himself whether the presumption of *mala fides* in the other party cancels the moral obligation originated by his promise. Spinoza is tacitly legitimating unlimited deceit and bad faith towards any one who is " outside the pale ". Hence I cannot but agree with Prof. Laird that Spinoza's *theory*—his practice

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[1] *Cf. Tractatus Theologico-Politicus,* c. 16. Hostis est quicumque extra civitatem ita vivit ut neque ut confoederatus, neque ut subditus, imperium civitatis agnoscat.

would, no doubt, have been much better—is tainted by a *wicked-ness* from which Hobbes, as his fellow-countrymen may be glad to recognise, is entirely free. The maxim *nulla fides haeretico praestanda* may conceivably—I do not know—have originally had an innocent meaning ; the thought may have been that I should never trust the heretic's word without substantial guarantees, because I can have no assurance that *he* respects the same ultimate " sanctions " as I do. But whatever the original meaning of the maxim, it became one of the most abominable principles of the worst kind of ecclesiastic, and Spinoza has adopted it, in its full extent, and enlarged its scope by making it apply to any man whose political allegiance is other than my own. By an entertaining irony of history the ardent defender of the ' liberty of prophesying ', whose *Tractatus Theologico-politicus* was undertaken as an *apologia* for the broadest toleration, has also supplied the ' totalitarian State ' with the standing defence of its fanatical particularism.

I do not make these remarks in the interests of a narrowly ' deontological ' conception of ethics. I should myself be the first to admit that our sense of obligation itself is due in the end to the drawing power of good recognised for what it is, that it is the ἀγαθόν which is also the δέον. What I am contending for is not any *independence* of the notion of *right* as against that of *good*, but the impossibility of separating the two. It is, I should say, characteristic of the morally good to be obligatory, and any professed account of it which leaves this feature of it out of account is at once discredited.[1] You cannot even reduce the good to the *desirable*, unless you are careful to explain that by the *desirable* you mean not that which *can* be desired, but that which *cannot but be desired* by sane and properly informed minds ; the further reduction of *good* to the *actually desired* attempted by Spinoza, as by so many others, is positively preposterous, unless its meaning is completely transformed by the explanation that no man knows, except in the vaguest way, what it is that he actually desires, while most men suppose themselves to be de-siring what in reality they do not desire. If it is a fact that all of us desire the good, as Socrates and Plato held, it is no less a fact that many of the things most of us believe ourselves to desire are actually bad. A moral philosophy of the naturalistic type, professing to found itself upon empirical fact, cannot, of course, treat of *unconscious* desires as ascertained facts ; at most

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[1] *Cf.* M. C. D'Arcy, *Thomas Aquinas*, p. 230. " The good for man must appeal to him as his duty, for the reason that he is possessed of a mind and will which of their natures move in the world of the absolute."

it can only allow itself to speculate about them as an unverifiable imaginative hypothesis. The ascertained and certain " facts " from which it starts must be statements about what men suppose themselves to desire and say that they desire, and if many of these supposed objects of desire are, as they certainly are, evil, such a moral philosophy is bound to go wrong from the outset.

And now what is to be said about the concluding section of the *Ethics*, the famous doctrine of the " intellectual love of God " and the deathlessness which that love confers on a certain ' part ' of the mind ? In the first place, I fully admit the contention of Martineau that the strict logic of Spinozism requires us to hold that this ' love ' (though it is said to be ' part of the infinite intellectual love with which God loves himself ', and even spoken of as a ' love of God for man ') does not exist in God ' as infinite ', but only as ' constituting this or that finite mind ', and would thus seem to mean no more than that content or delight which the human thinker derives from his passionless insight into truth, and that its ' eternity ' similarly should only mean that while we are engaged in the contemplation of scientific truth, we are lifted into a region in which we forget our concern with our own personal destinies. But it seems to me no less clear that, whether his own logic can justify him or not, Spinoza really meant more than this ; he did suppose himself to have found in the doctrine a message of personal hope for himself. This comes out plainly enough in the fact that, though for obvious reasons he makes a point of avoiding the word *immortality*, with its suggestions of survival, in favour of the term *eternity*, he does incidentally allow himself to talk of ' deathlessness ', and a ' part of the mind which cannot be *destroyed* ', and what is this but to give back with one hand what he has taken away with the other ?

And there is an obvious difficulty which Martineau and those who agree with him in accepting a minimising exegesis of the famous propositions never really face. It should be clear that the *eternity* ascribed to a ' part ' of the thinker's mind cannot be simply the same thing as the eternity which Spinoza, like Descartes and Leibniz, attributes to scientific truths as such. In the sense in which the Pythagorean theorem can be said to be an *aeterna veritas*, the same thing can be said about any proposition which is really true. True statements about the mind subject to the domination of the passions are no less *aeternae veritates* than true propositions about the mind which has emancipated itself. If all that were meant by the eternity of that ' part of the mind ' which has adequate knowledge, were that ' timelessly true '

propositions can be made about it, there would be no reason why this eternity should be treated as a prerogative of one particular part of the mind, or why it should be represented as something only to be won by a life of arduous mental and moral discipline. In any case, then, something more than this must be intended. But what? Martineau has, I think, tried to answer the question, but his solution comes only to this, that the true thought, once conceived, persists indefinitely as a thought in some one's mind, though not necessarily in the mind of any particular person. Thus the mind of Newton may long have ceased to function, but the Binomial Theorem remains, and will remain, a truth entertained by the minds of all mathematicians, and this is all that Spinoza means by his language about death-lessness. He means only that my thoughts, so far as they are true, persist in God as ' constituting the *essentia* of *some* human mind '.[1]

Now I admit at once that, owing to Spinoza's neglect to dis-tinguish the concipient from the *conceptum* and the *conceptio*, there is a standing equivocation in his use of the expression 'the mind of X '; he never seems to be clear whether he means the propositions entertained as true by X, or the X who so entertains them, and this would make it very easy for him to talk of the survival of Newton's thought as though it were the same thing as the survival of the thinker. And yet I feel, and I think reasonably feel, a difficulty in supposing that this is all that he intends. For it simply is not true, and I should have thought that even a thinker of the optimistic ' century of genius ' must have known it not to be true, that a true proposition once discovered must persist continuously and indefinitely in being entertained by all posterity. Can Spinoza not have known that a truth may be discovered only to be lost again?

I may take as an illustration the case of some of the propositions about numbers enunciated by Fermat.[2] Some of these, as I am given to understand by mathematical friends, remain to this day undemonstrated, though believed to be true. In other words it is believed that they can be proved, though no one knows what the proof is. Let us suppose then, what I take it is at least possible, that one of these propositions is true and that Fermat had a proof of it which he never made known. (In the early

[1] *Types of Ethical Theory*,[2] I, 381.
[2] For example, take the proposition that if a, b, c be integers the equation $a^n + b^n = c^n$ is always false if $n > 2$. This is, I understand, believed to be true, but no general proof is known, though Fermat said that he had discovered a *demonstratio mirabilis* (Peano, *Formulario*, II. § 9.4).

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years of the nineteenth century, Legendre writes about one such
theorem as one which may well be true though no successor of
Fermat has ever succeeded in demonstrating it in its complete
generality.) [1] If, then, Fermat's theorem is true, his knowledge
of that truth did not persist endlessly, though in some other mind
than that of Fermat ; that ' part of his mind ' did not escape the
doom of destruction by death.

On the other side, it is not only truths but ' vulgar errors '
which enjoy a persistence of this kind. No one has been more
emphatic than Spinoza in insisting that *fieri non potest* that men
should get rid of ' inadequate ideas '. He certainly regarded the
belief in our own freedom, for example, as a mere illusion due
to our ignorance, until enlightened by a philosophy like his own,
of the causes of our acts. Equally certainly he held that this
ignorance with the consequent false belief in our freedom, is an
inevitable and incurable consequence of our situation in the
universe. The truest thinking of Galileo or Newton is, at best,
no more ' eternal ' than the vulgar error of believing in freedom.
Once more, then, with what right, on Martineau's interpretation,
does Spinoza make *eternity* a prerogative in particular of *true*
thinking ?

He can only do so, as it seems to me, if he intends to ascribe
' indestructibility by death ' not simply to the true thought,
but to the mind which thinks it. If that is his meaning, we can
understand him. For if it is true that he who has a true idea
knows that he has it, error and prejudice may be as perennial in
the human species as truth, and truth may only be discovered
by a solitary thinker to be lost again by his successors, but for
the thinker who has found a truth, what he has found is hence-
forth a genuine possession ; if he, in some way, persists, and
not otherwise, the possession is really a κτῆμα εἰς ἀεί. Such
considerations lead me to think that Spinoza really meant to
ascribe an eternity which may not be exhausted by, but yet
includes, persistence in despite of death to the individual mind,

[1] Legendre, *Théorie des nombres*, 204-206. The theorem specially dis-
cussed here is Fermat's proposition that any integer can be represented
as the sum of not more than three ' triangular ' numbers. Legendre says
that while he knows of no proof of this, it may be considered as probably
true, because one can from it immediately deduce the known and demon-
strable consequence that any integer can be represented as the sum of not
more than four squares. But Fermat's language, as quoted by Legendre,
shows that *he* believed himself to be able to demonstrate the primary
proposition itself. It would be no way out to suggest that the knowledge
of such a truth survives in the *infinitus intellectus* Dei ; that is, for Spinoza,
a ' creature ' with no existence apart from that of individual minds.

or rather to that 'part of it' which thinks. (His phraseology, we must remember, comes to him from Maimonides, and Maimonides, in turn, clearly took it from Aristotle's mysterious words in *de Anima III.* about the imperishability of the *intellectus agens*. And whatever Aristotle may have meant by his few broken phrases, there is really nothing in them to suggest that he regarded the *intellectus agens* as detachable from the individual person. He says, indeed, in the *de Generatione Animalium* that it 'comes from outside', but that only means that it is not derived by generation from a man's parents, and is, in fact, just as much a part of the philosophy of Plato as of that of Aristotle.)

But if Spinoza really meant what it seems to me he must have meant, he is breaking away here from the very foundations of his own doctrine. Manifestly he does so when he converts the intellectual love of God into a 'part' of an infinite love of God for Himself. On an interpretation like Martineau's this 'infinite' love can, of course, only 'exist in God' as 'constituting the *essentiae* of particular minds', and will mean simply the summed devotion of countless such minds to truth. But the truth-lover's devotion to truth can hardly be described intelligibly as a devotion to *himself*. The meaning would have to be that I, who am a finite 'mode' of God, love God, not in so far as God is the finite mode which I call myself, but precisely in so far as God is envisaged as the absolute 'substance', as being what I am *not*. And it is of God precisely as *absolute infinitus* that we are told in V. 35 that he *gaudet infinita perfectione*, and that *concomitante idea sui*. *I.e.*, this intellectual love belongs to God not as *natura naturata* but as *natura naturans*, for it is only as *natura naturans* that God is " absolutely " infinite. (Even the *infinitus intellectus Dei*, being a mode of one particular attribute, could only be said to be infinite *in suo genere*.) Thus if Spinoza is to be taken at his word the 'infinite intellectual love of Himself' belongs to God, or should belong to God, as the *author* of nature, though this would not really be strictly consistent with the earlier declarations that the *infinitus intellectus* itself belongs to *natura naturata*, and is a mode 'produced' by God, who Himself *has* not *intellectus*, but merely produces *intellectus* in the 'creatures'. But a God who *has intellectus*, and feels a *gaudium* 'with a concomitant idea of Himself as its cause' is a *personal* God. You really cannot have it both ways. If you are going to admire Spinoza for his account of this intellectual love of God for Himself, you must be prepared to believe in a Deity who has both *intellectus* and *voluntas*. If you are to admire him for his superiority to the 'vulgar prejudice' which attributes understanding and will

to God, you must deny the very existence of the 'intellectual love' *as* Spinoza describes it. For, as I have said, if the phrase means nothing more than that *I* feel a peculiar "thrill" when I know the truth and know that I know it, that "joy" is not accompanied with an 'idea of *myself* as its cause'. I am, according to the theory, 'God as constituting the idea of a particular body', but it is *not* to God as constituting the idea of that body that 'absolute perfection' belongs. (And Spinoza indicates this plainly enough by appealing to his definition of *ens absolute infinitum* for the proof of his proposition.)

Where there is already so utter a failure in consistency, it becomes by comparison a secondary contradiction that the God who loves Himself with an infinite intellectual love has already been declared (V. 17 and Corr.) incapable of feeling pleasure or pain and therefore incapable of loving or hating anything. If it was to escape from making *this* contradiction too glaring that Spinoza avoided using the word *laetitia* in connection with the love of God for Himself, and preferred to speak of *gaudium*, he cannot well be said to have mended matters, for the *definition* propounded of *gaudium* in the appendix to *Pt.* III. (§ 16) had made *gaudium* a subspecies of *laetitia*, and a subspecies particularly hard to attribute to God (whether God be understood in the Theist's sense or in that of *Ethics* I.). *Gaudium* had been said to be '*laetitia* accompanied by the idea of a matter in the past which has fallen out beyond one's hopes'. But be the mind which entertains the idea of God as the absolutely infinite substance whose mind it may, the thought of that substance is not the thought of an unexpected stroke of past good fortune. (It is, to be sure, a very minor fault that by the time Spinoza had reached the end of his book he had forgotten his own definition of *gaudium* given in the middle of it. I only remark on the point because the psychological accuracy of the philosopher has been almost as much over-rated as his supposed logical rigour. Spinoza's empirical psychology is full of good things, but it has its full share of internal discrepancies and distortions of fact, if any one cares to take the trouble to look for them.)

The one point of capital importance in connection with the famous concluding section of the *Ethics* on which I want to insist is simply that somehow the conception of God with which the treatise opened, and to which it adhered faithfully enough down to the middle of *Pt.* V. is wholly transformed when we come to V. 35. If it is mainly on the strength of that proposition and those which follow it that a man admires Spinoza—and I believe that it is just these pages of the *Ethics* which have done most to

foster the attitude of Spinoza-worship—it is not for his eminence as a rigidly logical thinker that he is admiring him, but rather for his refusal to be logical. He is being revered for a personal religious faith which he entertains to the ruin of his whole meta-physical construction. It is just those critics who, like Martineau, will allow Spinoza no ' extra-belief ' going beyond what his metaphysical postulates can justify, who revere him least, and I think they are in the right from their own standpoint. In many respects (not in all, for he has his share of the bitternesses of the fanatic) one cannot admire Spinoza's personality more than it deserves. But I am not sure that Spinozism, as a pre-tended coherent metaphysical doctrine, does not deserve the hardest things which have ever been said about it. After all, when these unfavourable verdicts are translated into strictly philosophical and passionless language, they amount to no more than this, that Spinozism is a metaphysic built up in blind reliance on a misconceived " mathematical method " which starts from ' high abstractions ' as its foundations and consequently can never reach anything else in its conclusions. And this, as Tschirnhaus seems to have perceived at the time, is no more than the truth.

II.—THINGS AND APPEARANCES.

By J. Laird.

The questions I mean to consider in this article have been evoked,
and in an innocent way provoked, by a perusal of Mr. Paton's
recent commentary on Kant.   I hasten to explain, however, that
I am not attempting to challenge Mr. Paton's interpretation of
his author.   To do so I should have myself to be a qualified
Kant-commentator, and Mr. Paton's and Mr. de Vleeschauwer's
recent books, to mention no others, have convinced me of the
evident truth that a qualified Kant-commentator has to serve
a longer apprenticeship than I should care to undergo if I had
half a dozen lives before me.   Besides, I do not want to challenge
Mr. Paton's interpretations.   For the most part they have chapter
and verse in Kant, very carefully supplied, and where they ex-
ceed Kant's *ipsissima verba*, they seem to be careful and reason-
able.   They also appear to put into good English what Kant
said in German.

What is here attempted, then, is something quite different.
Presupposing that Kant, in substance, meant what Mr. Paton
says he meant, I want to ask whether his views regarding the
relation between appearances and things are tenable.   In dis-
cussing this question I am prepared to be unhistorical—I believe
legitimately.   A commentator would say—also quite legiti-
mately—that Kant did not set himself to answer anachronistic
questions, but that he explored the territory covered by these
questions in such and such a way, adding perhaps that if you
follow his lead you will find yourself pretty near the truth.   But
if anachronistic questions are relevant to Kant's theme it is
entirely proper to ask them, and it is an exaggerated asceticism
to decline to do so.

I have, however, to make a further preliminary explanation
that comes nearer to being an apology.   The problem of the
relation between things and their appearances in Kant's philo-
sophy concerns that entire philosophy.   Consequently an attempt
to deal with it [or more probably with parts of it] briefly and in
outline is uncomfortably hazardous.   Rod-fishing in Kantian

waters, if more exhilarating than the dredging methods of the commentators, also inspires less confidence ; but I have to use the rod.

According to Mr. Paton (II, 445) " the concept of appearance itself implies some correlative which is not an appearance. An appearance is nothing in itself ; it must be an appearance to something and an appearance of something. The latter point is the one with which Kant is especially concerned. The very word appearance implies a reference to ' something ' in itself, that is, to an object independent of our sensibility. The fact that the appearance itself (or our immediate idea of the object) is sensible does not affect this contention in the least ". In a footnote to the same page Mr. Paton explains that it is " a large question " whether the word ' appearance ' is " appropriately applied ".

These comments of Mr. Paton's, I think, introduce several of the more important points in the large question with which I propose to deal, and should be saluted in this sense. The first thing I want to say about them is that if an " appearance " is what it is here described as being, it must be regarded as a technical term with a highly specialised connotation. I should also submit that this highly specialised connotation is un-English and is therefore apt to be misleading in our language (but I do not think that the points I am now raising are peculiar to the English language).

An appearance, it is said, must be " *of* something " and must be " *to* something ". In other words, as I suppose, it must be that appearance *of* some *thing* (say T) *to* something else (say M), a mind.

Let us assume, then, that T appears to M. Interpreting this from the side of M, we should naturally say that M is aware of T. This interpretation, however, is forbidden. The " appearance ", it would seem, is an " immediate idea ", and in any ordinary sense of language we may be aware of what is remote as well as of what is proximate. Regarded in this way, therefore, the word " appearance " implies a certain initial stipulation regarding the awareness of it, or in other words a theory of that process ; and this theory cannot be regarded as an inevitable part of the meaning of being aware.

If we choose the other approach and say that " T appears ", we find very quickly that the sort of " appearance " of which Kant and Mr. Paton are speaking is not a mere synonym of " T appears ". For we use the verb " appear " in a very much wider way. We apply it, for instance, to propositions if these are matters of opinion. Such and such a statement, we say,

appears to be true ; it appears from the evidence that Wellington was a better tactician than strategist ; and so forth. In short, much appears to our judgment or intellect to be true or at least plausible. But we do not usually speak [and neither Kant nor Mr. Paton would speak in such cases] of intellectual or propositional appearances. In other words both common and technical speech agree in holding that an appearance is some sort of apparition and would maintain that we were speaking metaphorically if we talked about intellectual or propositional apparitions. We are *not* entitled to say " there is an appearance " [*i.e.*, an apparition] in every instance in which we can legitimately say " it appears that ".

That, I think, is clear, and it involves the obvious consequence that appearances in the sense described by Mr. Paton must be of a special type. For it is not the case that all *apparitions* must be apparitions *of* something or that the very word "apparition " " implies a reference to ' something ' in itself ". In dreams and in illusions there is no such implication. Dream-apparitions may appear *to* M, and they have a describable character ; but they may be all that there is in the case, mere seeming, and in that case are not in any intelligible sense dreams *of* any T. For this reason they are sometimes called *mere* appearances, and Mr. Paton himself uses the phrase (*e.g.*, I, 96).

I submit, therefore, that if the word " appearance "—that ' very word '—has the implications that Mr. Paton says it has, it has to be understood as a technical term. It is an apparition of a special kind, the kind that is ineluctably an " appearance of T ". And since the word " appearance " is also used more generally, as in the phrase " mere appearance ", I shall in future speak of an " appearance " (technical) when it seems important to remember that this technical use is being followed.

One of the principal differences for Kant (and ultimately, perhaps, the only difference) between an " appearance " (technical) and a *mere* appearance is that the former is *given* and the latter not ; and that is a further proof of the technicality of Kant's " appearances " (technical).

Mr. Paton himself shows a certain anxiety when dealing with " givenness ". He remarks for instance (I, 506 n) that givenness may be relative, and he amplifies the statement (I, 525) by saying that an intuition given independently of thought is given " in the strictest sense " and that an intuition given " *as a unity* " is given " only in a relative sense ". It is plain, however, that the givenness here in question, that is to say the givenness that distinguishes empirical reality from empirical illusion and with-

out which all concepts would be empty, must be a givenness that is not only " strict " but is also absolute. And *any* term that implies *absolute* givenness would seem to be a technical term.

If, for example, Kant were defending a Newtonian physics of " deduction from the phenomena " and repudiating a Cartesian physics of deduction from clear ideas (and that was one of the things he wanted to do), the relevant givenness would attach to the relevant scientific observations, that is to say to those pointer-readings, and those only, that were scientifically reputable. In that case it would surely be absurd to argue that *these* observations were given " absolutely " although other observations were not. Suppose, then, that what is held to be given absolutely is not so restricted but applies to all sense-data without restriction. In that case Kant would have to accept all the secondary qualities, and Mr. Paton tells us plainly that Kant did not accept them in the same sense as he accepted the primary qualities and that he sometimes " spoke as if they were purely subjective " (I, 60). Suppose, however, that these difficulties regarding the secondary qualities could be overcome. In that case, surely, the greatest difficulty of all would be left unsolved. For how could we know for certain what sense-like appearances *were* given, and were not *mere* appearances that were *not* given ?

I am not suggesting that this difficulty is peculiar to Kant's philosophy. On the contrary, I believe it embarrasses a host of philosophies ; but I cannot see that Kant's philosophy escapes it. If the truth be, as I believe it is, that there is nothing intrinsic to any apparition that distinguishes clearly and finally between its illusory and its non-illusory appearance, then we are never entitled to say for certain that any particular appearance is " given " in the absolute sense that is required. We are not entitled to say it of Hume's " impressions ", for Hume admits parenthetically that the phenomena of dreams, madness or fever may cheat us if we do. We are not entitled to say it of a sensum-theory of perception, unless we are prepared to admit dream-sensa, memory-data, etc., among the " sensa " on which our theory of perception is based. We are not entitled to say it of any theory which relies upon future verification in *sense*-experience, unless this theory can distinguish clearly between an illusory and a non-illusory verification of this kind. But we are also not entitled to say it of Kant's theory.

I think that most people who are not theory-ridden would admit that our trust in sensation as a witness to " reality " is principally based upon waking sensations, and in these not

absolutely but with some reserve. If so, a vigilant (and on occasion a critical) attitude towards sensation is presupposed; and it is commonly believed that young children have to acquire this critical attitude, and that the " imaginative " stage of their development would be more accurately described if it were called uncritical with respect to " reality ". Kant, in a part of his theory, I daresay, held a still more elaborate view of this order. According to this part of his theory a rational assurance that T was given would require the whole apparatus of the categories. In that case, however, an " appearance " (technical) would be most metaphysically and quite unconscionably technical, and a critic might reasonably complain that most of what Kant said about being " given in sensation " was a piece of gate-crashing that could scarcely be excused by his subsequent laborious effort to prepare proper credentials.

Since an argument that attempts to prove the peculiar and unusual technicality of such a term as Kant's " appearance " (technical) may itself be accused of being over-technical, I shall say no more about my first point, but shall attempt a freer treatment for the future. What I have said hitherto is little more, perhaps, than the crossing of the *t*'s of a comment that Mr. Paton tucks into a footnote (I, 70, *cf.* II, 445). Of Kant's argument that it would be " ludicrous that there should be an appearance without something which appears ", Mr. Paton says, "Taken as an argument, such a statement is unconvincing for it depends upon the term ' appearance ', which may be inappropriate. Nevertheless it expresses one of the fundamental, if unreflective, convictions of the human mind, and this conviction is shared by Kant ". I have said nothing so severe, and I believe I have been dealing with topics of moment, although my ostensible subject has been the application of terms.

The wide general question with which we are here concerned is the question whether it is true in fact that things, if they appear to us, must appear to be different from what they are in themselves. " Things as they are in themselves," Mr. Paton says (I, 61) in one of his many statements of this characteristically Kantian position, " are the very same things that appear to us, although they appear to us, and because of our powers of knowing must appear to us, as different from what they are in themselves". The chief philosophical query is " Must they indeed ? ".

I submit that it is wholly preposterous to affirm that from the statement "T appears to M " it can be straightway inferred, in any valid way, that T could not conceivably appear *in propria persona*. There is no logical contradiction whatsoever implied

in a thing being as it appears or appearing as it is.   Consequently, if it be true that T never does and never can appear *in propria persona*, the reason cannot be found in the mere circumstance that T appears, is manifest, is revealed, is shown.   The question must refer to some particular way in which it is bound to show itself ; and the general principle must be that the particular way or ways in which it is bound to show itself has the consequences aforesaid.

Such a claim is frequently made regarding everything that appears *in human sensibility*, and Kant holds that we are never acquainted with existence in a wholly non-sensory way.   Without necessarily accepting this metaphysical position, we may certainly ask, with the utmost philosophical prudence and propriety, whether *in so far as* T appears in human sensibility it must necessarily appear as it is not in itself.

Here again it seems clear that there is no plain contradiction in the view that T might conceivably be sensed as it is in itself— that its surface, for instance, might be red and square when it is seen to be so.   What is usually claimed nowadays is that naïve realism, as it is called, succumbs to a bombardment of factual difficulties but is not in itself nonsensical.   Kant, however (*teste* Mr. Paton) did not see the need for such detailed arguments, although he may incidentally have supplied some general ones.   So I shall refer to some of these.

Kant holds, for example, that sense-appearances are passive, and that things in themselves are not.   Here the meaning of " passivity " in the relevant sense may be rather vague, as when Mr. Paton says (I, 70) that things are given to sensibility " without any effort on our part ".   If that were all, it would surely be very disputable indeed whether sense-appearances *are*, in this sense, " passive " and are not to be regarded as a type of mental response.   But if they were " passive " in this vague sense, the point could scarcely concern what they *were*.   A ball, one would suppose, would be in a cricketer's hand, and would just be a ball, whether the cricketer had caught it skilfully or had had it put there without any effort on his part.

It is needless, however, to cite such examples.   The simple truth is that " passivity " in this sense describes a certain epistemological status and never describes what anything is.   To say that T stands in a relation of epistemological passivity with regard to M cannot imply that T is anything except T, and does not generate a new entity, a passive epistemological T<small>M</small>.   Indeed it seems reasonable to deny that there are any epistemological things.

Nothing, therefore, can be inferred from epistemological "passivity" (if it exists), and Kant, as Mr. Paton admits apologetically (*e.g.*, I, 62), very frequently assumes that sense-appearances are the *effects* of T in M. [The apologies, of course, are required because causality, according to Kant's official view, is a phenomenal relation, and is therefore inapplicable to things in themselves.]

The objections here are very formidable. Inside the Kantian system there is the deep and pervasive difficulty that these apologetic commentators try to palliate. Outside the system there are many others. If it be granted that an effect must be different from its cause, and also that sense-appearances are the effect of T, it follows that T, in so far as it is known through such effects, is known through something other than itself, which therefore may be presumed to have *some* properties that T does not have. On the other hand, it certainly does not follow that the effect can have none of the properties of its cause, and the critical realists of not-quite-modern America avail themselves of the circumstance to argue not only that the appearance of T may be identical in "essence" with T, but also that we can have rational assurance of such identity.

That however does not end the story. On this causal theory we are surely entitled to ask whether T is supposed to be *the* proximate cause of the sense-appearance or only *a* remote cause-factor in its genesis. May not T, for example, be the origin of a ray of light, and so be only one of the factors that lead to what we call the appearance of a distant star? Again (and still more formidably), what right have we to assume that the effect of T upon our sensibility is an "appearance" *that implies an awareness of T?* The scratch, it is agreed, need not know the thorn. Does the pain know the scratch or the thorn? And if the pain does not know the scratch or the thorn, and is not regarded as an appearance either of scratch or of thorn, it is clear that not all affections of our sensibility are appearances in the required sense, to say nothing of "appearances" (technical). For the pain, be it noted, *is* an "affection of our sensibility".

I conclude then that general arguments of this type do not appreciably strengthen the Kantian case. If they purport to be drawn from the very meaning of sense-appearance they are misleading, because they are drawn in fact from a particular theory of sense-appearance. And it is disputable whether they prove very much even within the narrow ambit of that particular theory.

A less general but a much more striking and much more famous

Kantian argument is that things must appear to us under the "forms of intuition" space and time, that the "forms of intuition" are not in the things but in us, and consequently that things as they appear to us must be very different indeed from these same things as they are in themselves.

This fundamental contention, if it were true, would have wide ramifications very pertinent to our present theme. All of our sensa are temporal (at any rate in the sense that they appear either to persist or to change). Organic sensa and sensa that are visual or tactual appear to be spatial in the sense of figured and extended. Auditory sensa, although they may not appear to have shape, appear to have spatial position; and even tastes and smells seem to be in a manner spatial, although the manner may be rather hard to define. In short, spatiality and temporality seem to suffuse our sensa so radically and so intimately that if they were stripped away in thought it would be immensely difficult to hold that things-in-themselves, thus stripped, would not be very different indeed from sense-appearances. That would be plain if things were noümena, *i.e.*, entities whose substance was pure thought (if such a view had any meaning at all). It might not be quite so plain if things, as has been suggested rather wildly, consisted of secondary qualities (or of some of these), unspatialised and untemporalised; and it might not be quite so plain on some other theories. But it would be pretty plain on any theory.

For these and other reasons it is a fundamental question whether Kant proved his theory of the subjectivity-in-universality of space and of time. That, however, is far too big a question for this essay. I must therefore choose a slighter topic, and shall enquire into certain observations of Mr. Paton upon it that interest me very much.

Mr. Paton expresses what I take to be the official view upon the subject when he says (I, 168 n) :—" We might indeed object that differences and likenesses in appearances must imply some sort of differences and likenesses in the thing, or things, that appear ; but we have no means of knowing the respect in which things-in-themselves, or their qualities, differ from, or resemble, one another. We do not even know that there is a plurality of such things, or that things-in-themselves can have qualities, although we must think of them, by analogy, as a plurality and as having qualities. In such circumstances a statement of their differences and likenesses is too vague to convey positive meaning."

The official view then is that quite certainly there is a T (or

T's) and that T (or T's) appears to our sensibility in spatio-
temporal form ; for the rest it is incurably and ineluctably
vague, with a vagueness that could never be lessened. It is
poised on the straw that it would be ludicrous to suppose an
appearance if " nothing " appeared, and it is easy, although
doubtless un-Kantian, to sympathise with those critics who be-
lieve they can puff the straw away. Mr. Paton is no such traitor ;
but he is prepared, on occasion, to be much more positive than
the official view permits.

Thus he writes (II, 417), " An appearance is always the ap-
pearance of a thing wholly independent of our mind and existing
in its own right. Even the spatial and temporal characteristics
which it possesses are appearances of real characteristics of the
thing as it is in itself. Because of the nature of our mind things
must appear to us as spatial and temporal ; but it is because of
the character of the thing-in-itself that we see one object as
round and another as square. We do not know what this character
is, but we cannot regard it as roundness or squareness, because
we cannot regard it as spatial at all. Indeed, we know the
thing only as it appears to us, or as it is in relation to our minds ;
and consequently we do not know whether we can rightly speak
of it as ' existing ' or ' possessing characteristics ', since for us
these terms must imply a reference to time and space."

With the exception of the last sentence in it, this passage, I
think, definitely contradicts Mr. Paton's statement of what I
have called the official view ; and, by parity of argument, the
last sentence seems to me to contradict the rest. In saying this,
however, I am not trying to reproach Mr. Paton. I have no
doubt that the contradiction (or what I take to be one) is to be
found in Kant itself. The official view is easily supported from
the text of Kant, and the other is hard to avoid. I confess, in-
deed, to a novice's qualms regarding the second sentence in the
second quotation ; but Mr. Paton supports it (*ibid.* n. 3) by
referring to a lengthy argument of his own (I, 136-143) although
he regrets at the end of this argument that " Kant does not make
his position so clear as to be beyond dispute ". I must also
confess to a doubt whether a non-existent T could appear in any
sensibility whatsoever. But I have no doubt at all that Kant
thought and spoke of things-in-themselves in the plural, or that
in ethics he was quite convinced that his own (noümenal) will
was distinct from the (noümenal) wills of Garve, Mendelssohn,
Lampe and other of his acquaintances.

What is more, I should like to row with the tide of Mr. Paton's
less official view for some little distance. " Because of the nature

of our mind things must appear to us as spatial and temporal ; but it is because of the character of the thing-in-itself that we see one object as round and another as square." Clearly we cannot stop here. The character of the thing-in-itself, according to Mr. Paton's argument, must also determine the difference between a square and all other rectangles, between a circle and all ellipses, between all the ellipses, between all the rectangles, and between all the little figures of the same shape that may be contained in the bigger figures. In short, every sensible geometrical difference must correspond with precision to a determining difference in T. The geometry of the sensible world is, in Leibnizian language, a *phenomenon bene fundatum*. But may it not be objected that it is rather too well founded, and consequently indistinguishable, in any reasonable way, from an unphenomenal T ?

Regarding space, I think, this objection may be only specious. In itself this minute correspondence of differences, without identity in the entities that correspond, is not unthinkable and might be illustrated by the ordinary physicists' view of the relation between colour-stimuli and colour sensations. The stimuli, according to this view, are colourless, but their differences in wave-length determine the minutest psychological differences in our sensations of hue. Similarly it might be suggested that pure geometry might conceivably be " arithmetised " and that although the equation for a circle would not look like a circle it might nevertheless uniquely determine a circle.

It seems much more difficult, however, to accept Mr. Paton's similar contentions about time. A time in which there is genuine change or process can scarcely be " arithmetised " or " logicised " in its full meaning, and although we can easily understand the illusion of change when a mental change is erroneously attributed to T, Mr. Paton's view is not concerned with this type of illusion, but asserts that without illusion the differences in sensible time are determined by differences in T. According to the official Kantian view, I suppose, T neither changes nor persists unchanged. That of itself is very hard to believe, and it is denied by most philosophies of eternity or of *aevum*, since these philosophies commonly affirm that all vicissitude is illusory. But what are we to make of the view that every sensible timedifference that is not a " mere " appearance is determined by a corresponding difference in a T that neither changes nor doesn't ? And if we do not say so, how can we avoid attributing timedifferences (or at any rate process-differences) to T ? How could T, without itself changing, be the sole determinant of all the differen-

tial changes in sensible experience ? What would be the meaning of a concomitant variation in which one of the partners did not vary at all ? And if T does vary, how could it be timeless ?

It would seem, then, that neither Mr. Paton's official view nor his less official view is at all easy to accept, and that it is even more difficult to accept both of them together.

I find another of his major explanations almost equally puzzling, and not the less so because it is indubitably Kantian. " If we can determine the nature of space and time independently of experience ", he says (I, 167), " and thereby legislate for all possible objects of experience, this can only be (according to Kant) because space and time are due to the nature of our sensibility. No other explanation can account for the fact that our abstract knowledge of space and time possesses apodeictic certainty and also applies to all objects of experience. Kant's theory is not merely possible or probable. It claims to be absolutely certain."

I do not know how far the force of this particular argument depends upon the word " abstract ", but I take Mr. Paton's general contention to be, as it frequently is in the course of his commentary, that if space and time (say) were anything other than the mind's essential way with T, it would be merely an empirical fact (which in temporal language might change any day) that T, up to the present, has always appeared in that guise. If however it is the differences in T that determine all spatio-temporal differences it is hard to see how this view could be true without assuming what Mr. Paton would have to call an *empirical* constancy and serenity in T. And there is more than that ; for surely, in this sense of the word " empirical ", it is also necessary to assume that M retains its essential way of apprehending. If M changed its ways, if its sensibility became either sub-human or super-human, what would become of the apodeictic certainty of the human spatio-temporality of all human sense-" appearances " (technical) ? No doubt, we might truthfully aver that if M changed its habits in this fundamental way it would cease to be our good old M ; but similarly we might correctly affirm that if T kicked over the traces it would cease to be the good old T, and that if " appearances " (technical) became insane they would cease to be called " appearances " (technical). At some point insight is needed ; and insight into mental structure cannot claim any special privileges in comparison with insight into non-mental structure. Actually the Kantian theory presupposes a fundamental constancy both in M and in T, and has no right to maintain that the constancy of

the one is either more or less " empirical " than the constancy
of the other.

I should now proceed to problems in the logic of appearances.
These are the next in orderly sequence and they are also the
biggest thing in Kant. I fear, however, that I have first to
interpose a further account of Kant's use of the word appearance,
partly because it is overdue, and partly with an eye to the sequel.
It will suffice, I think, if I recount some of the main distinctions
that Mr. Paton draws.

In I, 339 n., Mr. Paton says that Kant usually applies the
word " appearance " to " the whole phenomenal object (as
opposed to the thing in itself) " although he also uses the word
to designate " what is to-day called the sensum or sense-datum ".
Discussing the Second Analogy, Mr. Paton says (II, 230 f) that
in one of Kant's arguments " appearance " signified the different
successive states of a (phenomenal) substance, although in another
argument it was used for " a whole object such as a house ",
and he suggests that appearances in the first sense should be
called ' the manifold of the appearance '. In I, 96, he says that
the phenomenal object, if we speak strictly, is given " only as
regards its matter " and he suggests that this " matter " (or
manifold) consists of sensa—a difficult reading, I think, since
sensa are spatio-temporal. In I, 477, he says that " the appearance
given to us at any moment is something very poor and thin,
which implies other appearances beyond itself. We see the
appearance of the front of a house, but we think that the sides
and back of the house could also appear to us ". Mr. Paton,
on occasion, is also prepared to contrast appearance with ex-
perience. Thus in I, 488, he says that " sensibility by itself
could give us only *appearances*, but never *objects* of empirical
knowledge, and therefore it could never give us *experience* ".

It is clear from these statements that Kant allowed himself
considerable latitude in his use of the word appearance. Some-
times he applied the word to a " whole phenomenal object "
(of experience) such as a house, sometimes, although not so
frequently, to momentary sensa, sometimes in a way inter-
mediate between these. The point, perhaps, is of no great
moment in itself, but it would be the occasion of a good deal of
trouble if it were forgotten.

Let us turn, however, to the logic of sensory experience in
Kant's theory.

That is the theme of the Analytic, and of a large part of the
Dialectic too. Even more obviously than in the case of space
and time, therefore,—the theme of the Aesthetic—it is impossible

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for me here to do more than make a few casts with my rod. It should be possible, however, to say something pertinent, if superficial, on the general subject of this essay, that is, upon the question why, if at all, a rational man should be convinced that it is humanly impossible to be aware of things as they are in themselves.

One of Kant's major contentions is that, for human beings, all that is given is sensed and all that is sensed is given. [The only exception is moral obligation, a " fact of pure reason " ; but in that case the *modus operandi* of "reason" remains problematical, although the " fact " itself is indubitable]. Other beings such as God or the angels might have an appropriate " intellectual intuition ". But men have not.

Hence he inferred that a real logic, that is to say a logic that can do business with actuality, must be a kind of sensitised intellectuality or logicised sensitivity. The function of such a logic is to universalise and to necessify what is given in sense and therefore real.

This argument, therefore, is based upon the exclusive givenness of sense in human experience, and upon the consequent restriction of " real " logic. Hence it is subject to the difficulties we formerly noticed regarding the " given ". If sense be an infallible mark of T, what is the infallible mark of sense as opposed to dreams and their like ? And there are further difficulties of the same order. Let it be granted that what we call the existent world is sense-evidenced. Can we then be certain that it is the sensory element in our apprehension of it, and that element alone, that vouches for its reality ? It may be fantastic to suggest with Leibniz that sensation is merely confused rationality, but is it equally fantastic to suggest, in a Cartesian way, that the sensory element in such apprehension is a sort of vital embroidery, useful as a biological signal but quite incognoscitive of fact, thought and not sense being alone entitled to affirm as well as to play with reality ? Alternatively why should it be impossible, on general grounds, that the manifold of sensibility or parts of it should literally be scraps of T ?

It may further be objected that this account of logic regards that process as a sort of modelling—a formalising of the plastic material of sensibility—and that any such process is very far from being the whole duty of logic. It may account, let us say, for the formation of certain concepts—according to Mr. Paton (I, 199) " concepts are made *as regards their form*, by logical acts of the understanding, namely by comparison, reflexion and abstraction ". But Kant himself would have been the first to

admit that the formation of concepts is not the same as judgment.

I shall return to this point but for the moment will pass to another. Kant held that our " real " knowledge (*i.e.* our knowledge of T) requires the *union* of sense with thought. He further held that human sensibility could be only an appearance of T, a representation of it, and therefore different from it. Of this quite enough may have been said. But we may be told that if and so far as a realism of *thought* is suggested Kant was entitled to assume with most other philosophers that thought, like the statements and propositions that assert our thought, can only *correspond* to T and cannot *be* it. The mere fact that Kant scarcely troubled to make the point because he habitually took a different line in his anxiety to elaborate an amazingly revolutionary theory at a rather advanced age, and preferred to explore the synthetic unity of apprehension, is no reason (it may be said) for denying him a privilege that would have been accorded to his humblest students, and may have seemed to him scarcely worth the saying. Kantians at any rate can say it with confidence.

But *is* this matter so completely assured ? Even if it be granted that a proposition cannot in all respects be simply a slice of T, it does not follow that nothing of T can literally be a constituent of a proposition—that its subject, for example, can never be a T but only some concept representing some T. Similarly it does not follow that whatever is general in a proposition (the relations, say, that it asserts) are not general facts in T. As we have seen, Mr. Paton in his more official view, denies that we are entitled to affirm that T has either qualities or characteristics ; but on what grounds are we entitled to deny that it *may* have them ? And if it had them, would there be any valid grounds for denying that T's characteristics were the very characteristics asserted of it in some proposition ? If it be argued again, in a wider way, that every judgment is conceptual in some part of it, and therefore general in some part of it, and that no generality and no combination of generalities can exhaust the particularity of particular fact—what that is relevant follows ? You may prove in that way that *something* in T commonly and perhaps inevitably escapes logic, but you can hardly prove that the part of T that doesn't escape isn't caught.

With a layman's rashness I would hazard the assertion that Kant's theory of real knowledge is as good as entirely immanent. It renounces a merely personal immanentism (or ' psychologism '), or at any rate makes the most strenuous endeavours to do so, by its relentless quest of universality and necessity, but its professed transcendence is a thing of naught. Its sensory and its

logicised appearances (or concepts) are declared to be *of* T, but the theory is such that it can only salute a hidden T, and can never so much as approach this *ens absconditum*.

More specifically, it is a theory of logico-sensorial construction on the clear understanding that whatever is so constructed can never be T.   In so far as its logico-sensorial construction escapes " psychologism " it achieves universality of an inter-subjective and human kind, and the entire construction is said to " refer " to T because sensa are said to be " given " by T.   But it remains a huge referential construction whose moorings can never be investigated and are merely asserted.

That is the point to which I promised to return.   When Kant " refers to an object " such as a house or a chair, he produces a formalised representation.   His house or his chair is a permanent *necessitation* of sensations, that is to say, of sensory representatives.   As we have seen, he is even prepared to call the " house " an " appearance ".   But even if the house is a rule of appearing rather than itself an apparition, it remains a set of *symbols*, and is expressly separated from any T that may be *symbolised*.

Hence it is not a house.   At the best it is an " epistemological object ".   To this term, perhaps, no objection need be taken, for the term " object " is itself epistemological, and describes a certain epistemological status.   The difference between knowing anything and knowing it " as an object " is simply that in the latter case attention is called to this epistemological status, and in the former case is not.   If, however, there are " epistemological objects " there are no epistemological *things*.   T may be capable of standing in the subject-object relation, but this capacity cannot constitute any T, either in whole or in part.

It follows, I submit, that Kant's " empirical realism " is misnamed, and I shall end this essay by considering certain aspects of the partnership between " empirically real " and " transcendentally ideal " in Kant's philosophy.

Kant professed empirical realism, and repudiated empirical idealism, because he mistakenly supposed that an empirical idealist such as Berkeley had no answer to the criticism that empirical idealism reduced waking life to dream life.   That, in fact, as Mr. Paton would admit (*e.g.* II, 376), was the very first of the objections that Berkeley clearly saw and vigorously answered (*Principles* §§34 ff).   He may not have been wholly successful, but his answer, to say the least, was a better attempt to distinguish between " real " and illusory sense-ideas than Kant's simple assertion that for him the given in sensibility was an " appearance " (technical) of T.   For Berkeley's argument

was reasoned and was not a naked dogma. For the rest Kant's Refutation of Idealism is an attempt to prove that the spatial appearance of our apparent world is a perfectly genuine and unimputed feature *of that appearance*. But this supplementary argument would not even distinguish dream from waking, since dream-castles look as spatial as Balmoral.

Such contentions, by themselves, would not encourage a sophisticated realist, and there is little encouragement for him in Kant's theory itself. According to Kant a chair, let us say, is " that—and goodness knows what it is—which is quite different from the appearance of a chair but corresponds, in some unknown fashion, to that appearance ". The chair is the admitted but unknown and unknowable correlate of a permanent necessity of sensory representation. And that is scarcely so much as a lath-and-plaster realism. For it expressly declines to tell us what the chair *is*, and says instead that the chair, whatever it may be, is unknown and unknowable.

Berkeley claimed the privilege of " thinking with the learned and speaking with the vulgar " ; and it is difficult to believe that Kant was entitled to a greater privilege, if indeed, either he or Berkeley was entitled to so great a privilege. True, Mr. Paton affirms (I, 583) that Kant believed that the phenomenal world " must be made up of substances which interact causally in space " and (*ibid.*) that " the accidents of these substances are directly present to human minds ". Mr. Paton also says that Kant believed " not that we have ideas to which the world and the self correspond, but that the phenomenal world and self are directly present to our minds through thought and sense " (II, 385). In the second of these statements the word " idea " must surely be used in a sense that Kant does not always disown, and the word " directly " in both statements puts a strain upon the wrinkles of one's forehead. What is it except a curious rendering of our odd old acquaintance the " given ", mysterious, enigmatic and, one might almost say, charismatic ? The most that could be " directly present to our minds ", according to the critical philosophy, would be an epistemological object and not a thing. And vulgar speech refers to things. Kant may and does speak (sometimes) with vulgar realists ; but he also unthinks what they say.

If Kant had been an empirical realist in any effective sense it would be interesting to consider what sort of empirical realist he was. Pretty clearly (*cf.* Paton I, 71 f.) Kant's primary intention would have been to defend a scientific realism. That is the reason, probably, why Helmholtz and so many other scientists

followed him in the nineteenth century. If, however, Kant's design had been to restore a realistic but empirical world after stripping T both of primary and of secondary qualities in a metaphysical or transcendental sense, it would have been competent for him to try to restore the plain man's world, or even the naïve realism that philosophers suppose to be the plain person's belief. This tender affection for " common sense ", however, seems to have been more characteristic of Berkeley than of Kant. On the other hand, it would be pleasant to know how Kant, in his rôle of scientific realist, could justify the discards he would have been bound to make. On what grounds, for example, would he have been entitled to jettison the secondary qualities when it is so very clear that they are " directly present to our minds " ?

I am maintaining, however, that Kant was not a realist at all. Consequently it is a work of supererogation to consider minutely what sort of realist he might have been if he had not been Kant. Abandoning this subsidiary topic, therefore, I shall proceed to a final remark.

Kant's account of the antinomies, I submit, demonstrates the irrealism of his description of the phenomenal world. In an antinomical argument the contention is that two contradictories can both be demonstrated, for example, that there must and that there cannot be a first cause for the phenomenal world-series of causes. If such an antinomy be unambiguous and otherwise logically stringent, it proves beyond question that there is an inherent contradiction in the theme of the antinomy ; and nothing except illusion can be inherently contradictory. An illusion is just the sort of muddle that, if you think it out far enough, runs inevitably upon a contradiction, and there is nothing else that fits the description. In a valid antinomy either one or both of the arms of the antinomy must be illusory. Kant's antinomies concern the phenomenal. For him *because* the phenomenal world is *not* real, it is ultimately self-contradictory.

I am not suggesting that this summary statement exhausts Kant's ammunition in his elaborate action on the antinomical front, but it gives an epitome of the logic of the situation, and is quite definitely employed by Kant himself.

Take for example one of his explanations regarding the third antinomy (concerning freedom and determinism). In the *Practical Reason* (Abbott's translation,[1] p. 188) Kant says that if the doctrine of physical necessity were true it could never be

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[1] I have verified the accuracy of Abbott's translation in my excerpts from him.

within the power of any moral agent to act, since every action, *ex hypothesi*, is completely determined by *past* causes, and the past is outside any one's power. Nevertheless, says Kant, every moral agent knows that moral action (for example, abstinence from a tempting theft) is within his power " if only he is conscious that he is in his senses at the time, that is, in possession of his freedom " (*ibid*, p. 192).

Kant's comment is that " if we take the attributes of existence of things in time for attributes of things in themselves (which is the common view) it is impossible to reconcile the necessity of the causal relation with freedom ; they are contradictory " (*ibid*, p. 188). His solution is that time, however thoroughly it may be logicised, is only an order of appearance. In other words moral freedom is saved by the *unreality* of the temporal show of things.

I am not suggesting that this particular argument is a very good argument on its merits. It prompts the reflection, among others, that a Kantian who " speaks with the vulgar " about phenomenal causes either commits an elementary transcendental blunder or is speaking with his tongue in his cheek. For plain people *never* say that one appearance causes another appearance. In *their* language things alone can be causes, and appearances are never operative. Again the temporality of moral action is one of the most labyrinthine parts of Kant's moral theory. What I am saying is only that, in Kant's considered judgment the transcendental ideality of phenomena denies their reality, " empirical " or other. " Empirical " reality, in any case, could not be a species of reality. The most the phrase could legitimately mean would be a species of approach to reality. But Kant's " empirical " reality is quite definitely a transcendental *illusion*.

III.—PRINCIPLES OF LOGICAL EMPIRICISM.

By B. von Juhos.

(*Translated from the German by Dr. Annette Herzman.*)

I. The Metaphysical and the Empirical Reality-Concept.

Logical criticism of philosophical realism has led to a gradual development of certain points of view, whose relationships to one another may be characterised in the following way.

It is characteristic of *Metaphysical Realism* that it distinguishes two or even more " realities ". " Appearance and Reality " are perhaps the most appropriate terms we can employ to denote this distinction. The " world of appearance ", the world of the senses, is also " real " ; only we attribute to it transitoriness, changeableness, subjective dependence, etc., properties which ought not to be ascribed to the properly " real ", unchangeable world, the *Dinge an sich*.

Such an attempt to describe the world in terms of two or more " realities " has been rejected both by empiricist and by positivistic critics. All our statements about the real world, real events, are tested by empirical facts, by sensations, perceptions, feelings, etc. ; by data, consequently, which belong to the world of " appearance ". If it is logically impossible to test a statement with the help of such data, then it is no statement at all. Accordingly it only has meaning to speak of one reality, empirical reality. We call this new standpoint " *Empirical Realism* " (*empiristischer Realismus*).

The form of empiricism whose principles we shall outline here is founded on linguistic-logical investigation, and emphasises the distinction between " Language " (Logic) and " Reality." According to this view it is convenient to use the phraseology that empirical statements assert something about " facts " and, for purposes of verification, are in the last resort compared with " reality " (either they themselves or other statements derived from them). We have given this conception the name of " *Logical Empiricism* ".

As regards the terminology it should be noted that the desig-

nation " Logical Empiricism " was used, at the International Congress for Unity of Science (Paris, 1935), in a very general and unprecise manner, to denote *all* the opinions represented at that congress. As can be seen from the reports [1] many of the ideas were quite incompatible with one another. As opposed to this, the expression " Logical Empiricism " will be used in this paper to designate a very definite philosophical position, which we will attempt to explain here—laying particular emphasis upon a comparison with the theory of science as conceived by the Physicalists, Carnap and Neurath.[2]

The most recent tendency of so-called " Physicalism " is to go even further than Empirical Realism. The Physicalists are of the opinion that as soon as we speak of language and its statements as opposed to facts and reality, we can be easily misled by this mode of expression, into constructing metaphysical pseudo-problems. This can be shown, for instance, in the following example. If statements are compared with reality in order to test their veracity, the individual can only do this by means of " his own reality ", *i.e.*, only through his own experiences. Then, however, an intersubjective verification is impossible and the statements in question are unintelligible to others, and consequently, empirical science, which is comprehensible to all, would be an impossibility. Therefore it is necessary to reform the above-mentioned mode of expression, to speak only of language, but not of a " reality " as opposed to language. The Physicalists believe that a remaining bit of " Metaphysical Realism " is still to be found in all cases where this distinction is still made.[3] As will soon be shown, this criticism is not justified, so far as Logical Empiricism is concerned. By " reality " can be meant solely the world of experience, without having to accept a multitude of realities.

The theory of science of the Physicalists has been the object of my criticism, from the standpoint of Logical Empiricism, in several articles.[4] In this paper a method will be used, which is the opposite of that which I used in these articles. First the opinions of Logical Empiricism will be described, and then we shall present the objections of the " Relativists ", *i.e.*, of those who do not express themselves in terms of " language " as opposed to " reality ", but speak only of language and statements.

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[1] See *Erkenntnis* 5, 6 and the discourses published by Hermann & Co., Paris, 1936.

[2] I have already used the name " Logical Empiricism " in this exact meaning in my essay " Empiricism and Physicalism ", *Analysis*, 2, 6.

[3] *Cf.* O. Neurath in *Erkenntnis* 3, 2 and 3, 3, and also 4, 5 and 5, 5.

[4] *Cf.* Juhos, in *Erkenntnis* 4, 6 and 6, 1 and in *Analysis* 2, 6 and 3, 5.

II. INVARIANT SYSTEMS OF STATEMENTS.

Statements can be derived from physical theories, which are roughly confirmed through experience, and they can be divided up as follows. First, we have a group of statements which agree with observations ; secondly, a group of statements which do not agree with observations ; and thirdly, statements which because of practical difficulties cannot as yet be tested by observations.

If a physical theory, T_1, is given up in favour of another, T_2, because, as is usually said, it " gives a better description of the events ", then the following relationship exists between two such theories : all statements derived from T_1 and which are confirmed through observation, must be able to be translated into statements which can be derived from T_2 : otherwise we have not given up T_1 but use it in addition to T_2 to describe the physical occurrences. Furthermore, it must be possible to deduce statements from T_2 which agree with the observations, but cannot be transformed into statements which have been derived from T_1. It can happen that statements of the latter sort are incompatible with certain statements derived from T_1, but it is also possible that they as well as their negations are not contradictory to T_1. Of special importance is the fact that the system of statements, deduced from T_1 and confirmed through observations, must be able to be transformed into a sub-class of the statements derived from T_2 and likewise conforming to the observations. And the same is true, if T_2 is superseded by T_3, and so on. The statements which are derived from a T_n and which agree with observations, form accordingly an invariant group K_n, and out of all the theories T_{n+1}, T_{n+2}, . . ., which supersede T_n in the course of the development, it must always be possible to deduce a group of statements isomorphic with K_n.

Even though the language made use of in the individual theories T_n is ever so varied, and a significant alteration of the linguistic signs and rules takes place, it must always be kept in mind that a system of statements must be deducible from T_n which is isomorphic in its relationship to a complex of statements derived from T_{n-1} and confirmed through observations. Therefore, when a theory is being formed, our choice of language and axioms cannot be entirely arbitrary, since it must be possible to translate certain parts of the new theory into parts of those theories, which it replaces, and *vice versa*. In other words, the new theories and their language must always be constructed in such a manner that a transformation may be made with respect to

which the statement-systems of the old theories confirmed by observation remain *invariant*. This fact, which must be considered in the formation of physical theories, has been one of the reasons for the distinction made by Logical Empiricism between language and reality.

When one attempts to speak only in terms of language and its formal characteristics one sees very soon the impossibility of giving a reason, why the physical theories which supersede each other, as described above, must be connected by invariants. From the formal point of view, everything in language is determined arbitrarily : the rules are fixed in regard to the usage of the signs ; and the regulations for transforming the complexes of signs, and even the choice of the axioms, is arbitrary. With respect to the validity of analytic statements only the following possibilities exist : consistency, contradiction, or analytic non-determinability. (Other gradations of validity, such as we find in the so-called many-valued logics, need not be taken into consideration here.)   Since all statements derived from a certain theory have formally the same rights, we cannot determine by means of formal criteria which partial-system of statements should remain invariant when they are translated into other theories. The Logical Empiricist does not make the mistake of trying to find such a formal criterion. From his point of view the statements derived from a certain theory are compared with " reality ", and those which agree with reality must be represented by a corresponding group of statements, in isomorphic relationship to the former formulations, in any new theory which is established.

The Physicalists, on the other hand, prefer not to speak of " reality ", " facts ", etc., in regard to the case just described, their reason being the following : The theories of physics are often so basically altered in the course of development, that we should have to assume that the various theories correspond to various realities. In other words, if one theory is given up in favour of another, we should have to say : " It was not the ' true ' reality which the first theory described ". We find ourselves in such a situation, for instance, when we accept the Quantum mechanics in place of Newtonian mechanics.   From Newton's point of view, reality is composed of masses, which are to be found in certain localities, and possess definite impulses. According to Quantum mechanics, on the other hand, it does not make sense to speak of the existence of such " realities " in regard to micro-processes. Consequently, when the attempt is made to correlate language and reality, one is forced to speak

of many " realities ", or of a " true " and a " seeming " or " less true " reality—in short, to use expressions which are entirely metaphysical.

This objection, which claims that the variation in the language used in physical theories makes it necessary to differentiate between many realities, is brought about through a misunderstanding as to how the laws of nature are used in physics. Physical laws are presented in terms of functions. Now, the values derived from such functions do not describe *exactly* certain observable and measurable quantities. What takes place is that, in physics, every calculated value Z and the corresponding methods of measurement have an interval of inaccuracy I, and all measured values, which fall within this interval I, are considered in physics to agree with Z. (Such an interval is also found, in connection with the magnitudes which are inserted in place of the variables of functions. They characterise the so-called initial state, and thus errors of measurement are also always made in attempting to determine or to control these states.) The interval I indicates the inaccuracy of measurement, the " limits of error ". The limits of error (errors in observation) are dependent upon our methods of measurement (instruments, etc.). Cases are conceivable from amongst the possible relations between measured and calculated values, which logically exclude the employment of formulæ (and the physical concepts occurring in them) and these can therefore not be called " natural laws " any longer.

It may happen that a formula furnishes us with such subtle differences of value, that we do not possess a sufficiently fine method of observation to control them. In that case the error-intervals attaching to our means of observation, are so large that they always include a multitude of values calculated in accordance with the formula in question. A formula, which describes such hypothetical " single processes " can in principle not be tested, unless it is possible to construct sufficiently fine instruments. If this possibility does not exist, it would be contradictory to the customary terminology of physics, if we should still speak of such formulæ as " physical laws ".

An example taken from modern physics will help us to see this more clearly. As is well known, no data can be observed which correspond to the formulæ constructed for the single individual-waves of de Broglie. Only the middle amplitude-square of the waves, interpreted as the probability of a corpuscular distribution in a certain region of space, can be controlled by observation. However, the single individual-waves with their differences in

phase are by no means exactly defined by the middle amplitude-square. What actually can be calculated with the help of formulæ is a multitude of waves, all equally possible, but no criteria of observation exist (and because the velocities occurring in the functions surpass the velocity of light, no measurement is even conceivable), which could tell us which particular individual-waves (from amongst the many calculated ones) are to be co-ordinated with the physical initial-state of the observed distribution.   Or, as these facts have also been expressed : A multitude of mathematically deduced initial-states correspond to each observable initial-state.   The former are " unreal ", they cannot be determined, measured, or controlled through observation. If, in spite of this, in de Broglie's theory, certain attributes (such as velocity, direction, phase-differences) are ascribed to each of the individual-waves, it must be clearly understood that, by doing this, no physical laws have been asserted, nor have any statements been made about facts.

A theory has been propounded by Heisenberg covering the same field as de Broglie's theory, only that it deals essentially with quantities which can be verified through observation.   Such concepts as "individual waves", or any similar unverifiable and hypothetical " processes ", do not occur in Heisenberg's formulation.   In spite of this, it is *not* asserted in physics that the two theories describe two *different* " realities ".   On the contrary, it is accepted as a matter of course that they both describe the same events, exactly the same reality.   However, this mode of expression is facilitated in this case through the special circumstance that both theories are " *mutually* translatable ", which means that all statements derived from the one theory and confirmed through observation, can be expressed in terms of the other theory, and *vice versa*.   In any case we are chiefly interested in the fact that physicists call those formulæ of de Broglie's theory, which are not related to any observable facts and do not correspond to any of Heisenberg's formulations, a purely formal linguistic peculiarity of the former theory.   We find such purely linguistic differences for instance in comparing German with Latin.   The former contains both definite and indefinite articles, whereas the latter does not.   And it is just because we are here concerned only with differences in linguistic signs, that this fact does not prevent us from asserting that the empirical statements expressed in German describe the same " reality " as their Latin translations.

In the above-mentioned case, there is no doubt in our minds about contrasting language with reality, and asserting that both

theories describe the same reality. But how can this mode of expression be employed in a case in which two theories are related in the following manner ? A number of statements are deducible from the theory T_1 which are confirmed by observation. Then T_1 is superseded by a theory T_2 which expresses more precisely the values derived from T_1 and confirmed empirically ; and furthermore makes it possible to derive additional statements. which conform to reality, but which could not be deduced from T_1. Newton's mechanics and Quantum mechanics are related to each other in such a way.

In such theories, a mode of expression stating that they describe the " same " reality can seemingly not be used. The mechanics of Newton speaks of masses and their space-time relations. It was at first thought that these laws were not only valid so far as masses and space-time relationships of a certain size were concerned, but rather that they were true of particles (masses) and space-time quantities of any size whatever. As soon as it became possible to make observations and measurements of atomic processes also, it was proved that the previous opinion was erroneous. According to Newton's mechanics, for instance, continuous change in the distance of masses resulted in continuous change in the amount of their attractive force, in their accelera- tion, etc., and *vice versa*. In atomic processes, continuous varia- tion in distance between the corpuscles is not possible in certain constellations at all, and it is only discrete changes in energy, of a certain amount, that result in (also discrete) changes in energy-levels.

The contrast between the theory of Newton and the Quantum mechanics in the use of such terms as " mass ", " particle ", " corpuscle " seems to lead to still more insurmountable obstacles. In classical mechanics, bodies have a certain " mass " ; every body is situated in a definite place at a definite time, and has a definite impulse. These attributes were understood to be verifiable, measurable quantities. And at the same time, it was assumed that in *all* regions of magnitude these attributes were *always* measurable, and that thus the micro-processes could be described in terms of mass and corpuscles, which had the same properties as bodies in the region of macro-processes. Through the improvement in the instruments of observation, it was brought to light that not only were Newton's mechanics not applicable to corpuscular processes, but in addition, it was not possible to employ such phrases as " corpuscles, which are situated at a definite time in a definite place, with a definite impulse." Quantum mechanics, moreover, claims applicability

not only to micro-processes ; it also contains laws of mechanics which are applicable to macro-processes. The deviation of these laws from the laws of classical mechanics is not of consequence for measurement, but they display mathematically calculable differences.

If we still wish to cling to the contrast between language and reality, how can we avoid saying, in cases such as that just described, that, *e.g.*, classical mechanics and Quantum mechanics describe " two different realities " ? Both theories are based upon experiments and observations, therefore both of them describe " reality ". But, on the other hand, the more recent theory makes the use of classical terms impossible in certain cases ; the results obtained through calculations based upon Newton's laws in regard to micro-conditions could not even be called erroneous after the Quantum theory was set up ; they now made no sense. Taking these facts into consideration, if we wish to speak of reality at all, can we now avoid differentiating between several " different " realities, or between a " true " and " untrue " reality with regard to the relation of the two theories ?

These objections to the modes of speech of Logical Empiricism are based, in my view, upon an incorrect interpretation of the syntactical rules of usage of the laws of nature. Let us consider this more closely. Even if the mechanics of Newton has been replaced by Quantum mechanics, have those statements also been proved invalid, which were derived from the classical theory and which, in the present as in the past, are confirmed by certain observations ? Certainly not. These laws and statements— we will call them N_i—are still recognised by physics. On the other hand, statements Q_i must be deducible from Quantum mechanics, which are confirmed by the same observations as the N_i, otherwise it would not be possible to give up Newton's theory in favour of Quantum mechanics. What relationship have the Q_i and N_i to each other ? Do they designate different realities, despite the fact that they are tested as to their validity through the same set of observations ? As soon as we have analysed the relationship between these two groups of statements, the essential part of our question will have been answered. For the fact that certain statements are deducible from Quantum mechanics which cannot be obtained from the classical theory at all, is irrelevant to the logical question involved here, namely, whether we are forced to speak about " different realities ", as described above, in the comparison of the two theories. The classical theory makes no statements about the facts in question.

And similarly those cases in which classical mechanics has given us statements which can be controlled but have proved to be wrong, whereas statements in the Quantum mechanics for the corresponding facts do agree with observation, are also irrelevant. In these cases, one can employ without reserve the mode of expression, that both theories describe by means of their respective statements the same reality, but the description of classical mechanics was wrong.

But what about the statements N_i and Q_i ? As we have assumed, both types of statement have been confirmed by experience, and it is exactly the same measurements, observations, and experiments which confirm a N_i and the corresponding Q_i. Does this circumstance by itself give us the right to say that both sets of statements describe the same facts, the " same reality " ?   An objection could be made on the ground that the two theories employ different concepts and that this linguistic difference persists even where two corresponding statements are confirmed and tested by the same observations.   But it is evident that mere differences in language are not sufficient to make it necessary to speak of two different realities in relation to the two theories.   If in every case two corresponding statements can *only* be confirmed and tested through the same observations, then the one can only be a translation of the other, *i.e.*, both agree with the same facts.   According to our assumption, it must be possible (and this is actually the case) to translate the statements in Newton's mechanics which are confirmed by observations, into statements of Quantum mechanics having exactly the same meaning.   Hence there can be no doubt that the latter theory refers to the same facts with which Newton's mechanics agrees.   Consequently, in this case also, there seems to be no need to speak of " different " realities in relation to the terminology of the two theories.

One other case must be considered, since it has an important bearing on the relationship between the N_i and Q_i. It may happen that certain N_i are satisfactorily confirmed by observations, whose inaccuracy-interval amounts to I_1.   Accordingly, if a value indicated in a N_i deviates from a value obtained through observation, the difference lies within the interval I_1, *i.e.*, a control of the deviation is not possible by means of the instruments, etc., used in the observation.   But what if the means of observation are improved so that now the N_i are controlled by new observations which have a smaller inaccuracy-interval, I_2 ? Naturally the differences of the calculated values from those obtained by the new observations may still fall within the in-

accuracy-interval I_2. We will assume, however, that this is not the case in reference to the values given in the N_i. Consequently the N_i are confirmed by the observations with the inaccuracy-interval I_1, but they deviate from the observations with the smaller interval I_2. Now in any case, as we have seen, statements Q_i must exist which are confirmed by the observations with the error-interval I_1. But the values indicated in the Q_i need by no means be mathematically identical with those indicated in the N_i. It is sufficient that here also the differences between the calculated and the measured values should all lie within the interval I_1 (observations with smaller error-intervals being excluded by agreement) ; if they do, then the N_i and the Q_i count as physically equivalent. Relatively to such observations, the Q_i are merely a translation of the N_i, and *vice versa*. In our case we will now further assume that the Q_i differ from the N_i in the following manner. We investigate the deviation of the statements N_i and Q_i from the observations with the smaller error-interval I_2. Suppose we then find that the differences between the values mathematically deduced from the Q_i and the observed values all fall within I_2, whereas some of the analogous differences between the values of the N_i and the observed values are found to lie outside this interval. Relatively to these finer observations the Q_i can no longer be reckoned as merely translations of the N_i. But nevertheless statements can still be deduced from the Q_i which are physically equivalent to the N_i. Rules of transformation can be given, in accordance with which the Q_i can be so changed that we obtain statements of this sort. Such are, for instance, the rules for " approximation " or for the "neglect " (*Vernachlässigung*) of certain quantities. They allow us to eliminate magnitudes of a certain kind from precise laws (Q_i) or to substitute for them other " approximately " equal magnitudes, in order to obtain, in this way, the less exact laws (N_i). Of these latter we then say : " They are valid as a first (second, etc.) approximation ". What corresponds physically to the method of " neglect " is the arbitrary agreement that only those observations, whose error-intervals do not fall below a certain magnitude, are to be considered.

The most important relations between propositions belonging to different theories, in so far as they are of interest to us, have now been explained. It has, I hope, become clear that these relationships, in spite of linguistic differences between the two theories, do not make it necessary to speak of two different realities. That there actually exist between the propositions of classical and of Quantum mechanics, relations of just the same

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kind as between our N_i and Q_i is shown by the fact that it is
possible to deduce the classical mechanics from the Quantum
mechanics by the help of rules of " neglect " (" principle of
correspondence "), and that this has actually been done.

Classical mechanics still retains its validity in the region of
observations, whose error intervals have a certain magnitude.
The statements which they make with regard to such observa-
tions, agree in their meaning exactly with those statements made
in Quantum mechanics about the same observations. In other
words, that part of classical mechanics which agrees with obser-
vation, is taken over as invariant into Quantum mechanics.
And if at any time Quantum mechanics should be displaced by
another theory, the latter would also necessarily contain the
above-mentioned invariants (and also, naturally, others in addi-
tion). This fact that theories which displace one another are
bound together by invariants, which cannot be eliminated through
any conventional rules of language, is one of the reasons which
lead the logical empiricists to distinguish between language and
reality. Because of this fact, the expression that "various
theories must describe various realities " is not at all necessary,
as we hope has become evident from what we have said. The
formulæ of Quantum mechanics, for instance, can be changed
into those of classical mechanics for a certain region of magnitudes.
It is incorrect to think that it is absolutely forbidden in Quantum
mechanics to speak of corpora with definite simultaneous place-
and impulse-co-ordinates. This is only discredited in regard to
certain constellations of observations, in which the error-inter-
vals fall below a certain order of size. From Newton's mechanics
no statements at all can be derived which pertain to these new
experimental constellations. The laws and statements of the
older theory have meaning only as regards less fine observations.
And in the case of such observations, the Quantum mechanics
again, quite in the same manner as the classical mechanics,
permits one to speak of corpora which are to be found at a certain
place, having a certain mass and velocity. To say that reality
is described by physical theories thus seems to be entirely justified,
and there is no reason to distinguish between " two or more "
realities. On the other hand, to wish not to speak of " reality "
at all, but only of statements and linguistic expressions, seems
inexpedient (other doubts set aside) when we consider that
theories which displace one another are bound together through
invariants, a fact independent of all conventions of language.

III. Non-Behaviouristic Verification.

Logical Empiricism has still other reasons for calling physics, *i.e.*, empirical science, " a description of reality ". Empiricism takes into consideration at this point linguistic-logical rules, according to which certain empirical statements are employed in science.

It is said, particularly with regard to certain empirical statements, that they can *only* be verified through comparison with reality. According to what rules are these statements used ?

The signs out of which statements are formed or through which we present them, are signals for the empiricist which he employs by following certain established rules. If we have formed a statement p from signs according to these rules, or presented one as a signal, then two variations are possible as regards the relationship of this sign-complex to truth, falsity, or the decidability of p. Either it is possible to decide whether p is true, false, or analytically undecidable, merely by the help of the rules for the employment of the signs ; or such a decision cannot be reached in this way. In the latter case, all that can be gathered from the rules according to which p was formed, is under what conditions the decision as to the truth or falsity of the statement is logically possible ; but in order to determine whether p is to be designated as true or false, a knowledge of the linguistic rules and signs will not suffice. The second case applies to all empirical statements.

The empiricist takes the above-mentioned conditions into consideration in that he says : " to decide whether an empirical statement should be termed true or false, it is not sufficient to understand the linguistic signs and the rules of their use ; for that purpose the statement must be compared with ' reality ' ". This manner of expression must, however, be restricted in so far as, in the view of the empiricist, empirical statements are also often verified by referring back to other empirical statements, and therefore, in this case, by comparing them with other statements and not with " reality ". Only the empiricist believes that these references back cannot continue endlessly ; in the end we reach statements which can *only* be verified through comparison with " reality ". The rules for employing this last-mentioned type of statements eliminate the possibility that the statement in question can be false, merely because it contradicts some other empirical statements (or agrees with them respectively). (We wish to leave the question open whether there are not, in addition, statements which can be verified, partly by

comparing them with reality, partly with other statements. Such propositions, by the way, can be divided into an hypothetical and a non-hypothetical part.)

What other properties belong to those rules, which allow the verification of certain statements *only* through a comparison with " reality " ? Such statements will be termed " *K-statements* ". The rules directing how a statement *p* should be employed, must always indicate the circumstances under which *p* is to be called true or false. The Logical Empiricist has stated such rules for K-statements in various ways, and these will now be analysed.

First, K-statements may *only* be termed true (or false, respectively) when they themselves agree with reality (or do not agree, respectively). *Second*, if some one knows the rules according to which a K-statement is used, *i.e.*, understands what he means when he states *p*, then this person, if he states *p*, must always know at the same time whether he has made a true or false statement. In other words, a K-statement must not be designated as an error.

Each of these two rules determines one of the necessary conditions under which K-statements shall be true (or false, respectively). What relationship have they to one another? We will try to indicate their meaning with the help of other terms.

If a statement *p* may *only* be called true (false) when it itself agrees with reality (does not agree), this means, as we have clearly seen, that *p* can be true (false), no matter whether it is compatible or incompatible with other statements. Thus, it is not possible that such a statement *p* should be logically equivalent to an hypothesis. An hypothesis may, in addition, always be tested by comparing the statements deduced from it with others which have already been accepted, and the result of such comparisons may be sufficient to designate an hypothesis as verified, or falsified. Such a possibility is precluded in regard to K-statements, whereas it is not forbidden to relate a K-statement to an hypothesis as " empirically equivalent ". " Empirical equivalence " means that experience shows us that we are accustomed to term simultaneously the two respective statements true, or false respectively.

We have said that anyone who knows the rules for the employment of a K-statement *p*, and then states *p*, must also know whether his assertion is true or false, and this reminds us of the rules governing non-empirical statements. The difference in principle must not, however, be overlooked. If we understand

the rules according to which an analytic statement is formed and used, we shall note that we can deduce from these rules whether the analytic statement concerned is free of contradiction, contradictory, or whether it is undeterminable. These formal questions are of little importance in a consideration of employment-rules of empirical statements. We can assume that rules used in the formation and application of empirical statements (therefore K-statements also) do not lead to absurd contradictions ; or this can be controlled by mere consideration of the rules in question, if we are interested in this. Whereas we *cannot* gather from the rules of usage alone whether, for instance, a K-statement, if it is asserted, is also true. It is true that one of these rules (and that of course can be gathered from them) is that a K-statement must not be designated as an error, which means the same thing as the rule, that anyone making this kind of statement, who also is in complete command of the language in which he expresses himself, must also know whether he has made a true or a false statement. "Error" can also not be mentioned in connection with analytic statements : at most one can make "mistakes in speaking", "in writing", that is a "mistake in performance" (which naturally are also possible in K-statements) ; but this is of course something entirely different. However, it has probably been made clear that there is merely a superficial analogy between the rules of usage in accordance with which the K-statements and the analytic statements are formed.

Statements which can be erroneous are hypothetical. As has been mentioned above, the Logical Empiricists state two conditions according to which K-statements are to be employed, and these regulate the relation between hypothetical and non-hypothetical statements. On the one hand, K-statements can not be tested (verified) through a comparison with other sentences. This process of control is only allowed for hypotheses. On the other hand, it is impossible to call a K-statement erroneous. Only hypotheses can prove to be errors. Consequently, the rules of usage of K-statements define that such statements cannot be called hypotheses. It is meaningless to say that K-statements possess a greater or lesser degree of probability, or cannot be verified fully, etc. A K-statement is either true or false, and it is verified the moment it is made. It cannot be accepted as true (false) and then later prove itself to be false (true), and be accordingly altered as an error. Such an assertion can only be made purposely as a true or false one, and in the latter case can only be rejected as a lie.

The following criticism might be made upon our assertion.

We said that whether a K-statement is true or false, depends upon its agreement or disagreement with reality. Thus the objection could be made that a certain testing process is also used for K-statements, and that this only has meaning if the truth or falsity of a statement is only hypothetical. This argument is due to an unprecise mode of expression. The verification of K-statements is *not* a test which is made afterwards. We obtain them by comparing them with reality : assertion and verification are here identical, and the statements are not to be controlled afterwards, since the rules of their obtaining and application eliminate such a possibility. (The methods by which we attempt to ascertain whether anyone has lied when making a K-statement, are not a process of verification.) Since the obtaining of these statements and their verification form *the same* process here (namely : the comparison with reality) this conforms to our way of expressing these facts, namely : Anyone making a K-statement knows whether he has made a true or a false statement.

Now, which statements in empirical science are of the type of K-statements ? We will try to approach the answer to this question by first eliminating those statements whose methods of verification are incompatible with the rules which apply to K-statements, as cited above.

Certain empirical statements imply a number of other less general statements, and these can be deduced therefore, without assistance from any further empirical statements. If we take such a single statement as " this here is a table ", we can derive many other statements from it, merely through an analysis of the concepts ; for instance, with regard to the existence of parts of the table, their function, etc. These statements can likewise be tested as to their veracity ; and let us assume that, no matter how this test is made, some of these statements are not confirmed. Suppose, for instance, we made the deduction that the top of the table functions as a support, but when a test is made, we note that objects laid upon it fall to the ground, without any change in the table being noticed. We now have a choice between maintaining our statement " this here is a table " by introducing new hypotheses, or altering the statement by saying it was only a hallucination, and no table is to be found in the aforesaid place. In any case it can be seen that such a statement cannot be a K-statement. The reason is that it was not merely verified by comparing it with " reality " ; other statements were deduced from it, and the verification of the original statement is dependent upon the veracity of the deduced statements. Furthermore, one does not know as soon as the statement " this here is a table "

has been made, whether it is true or not.   We have seen that the possibility of an error is not excluded.   These conditions are always to be found when an empirical statement implies other empirical statements, and the latter can be derived from the former through logical analysis alone.

Consequently one characteristic of K-statements must be that no other statements are implied in them, which can be deduced from them alone.   Thus, when a relationship between a K-statement and other empirical statements exists (not including, naturally, merely tautological transpositions or a negation of the K-statement) then this relation can only be an *empirical* one.   This means that it is always logically possible to maintain or to reject (as a lie) a K-statement *without making use of auxiliary hypotheses*, no matter what the results of the verification of other statements are.   If, in spite of this fact, sometimes a K-statement is seemingly " tested " as to its veracity with the help of other statements, this is an expedient made necessary because of empirical and accidental conditions of verification.   As soon as we are uncertain whether some one has lied, or not, with a K-statement—under the conditions which happen to exist K-statements can only be verified by those who make them—we make use of the assistance of the " empirical " equivalence of the K-statement and other empirical statements.   The latter are tested, and according to the results, we accept or reject the K-statement concerned, just as if the empirical equivalence was a logical relationship.   We have already emphasised the fact that this is not a verification of K-statements.

There are actually empirical statements, which do *not* imply further empirical statements.   (" Implication " based upon the law of the excluded middle, or the law of contradiction, does not come in question here, naturally.)   There are statements stating the existence of " experiences ", in such a manner that their verification is only possible through *non-behaviouristic* methods. Logical Empiricism differs from Physicalism through the fact that the former demands that corresponding rules in regard to the use of such statements be established.

The Physicalists demand with their so-called " behaviouristic thesis " that all psychological statements be translatable into those about space-time processes, *i.e.*, in the case of psychology, about behaviouristic processes, in the most general sense of the word.   According to this view, a statement about psychical processes must always be verifiable with the help of behaviouristic data, by means of processes taking place in the human body and in the nervous system.   The psychological statement should

have no further meaning than a statement about such processes.
This means no more than that every psychological statement
must be *logically equivalent* to a number of statements about
space-time processes, and therefore these latter statements
should be implied analytically in the former one.   If this opinion
is accepted, it would follow that all empirical statements are only
hypotheses ; K-statements would thus be deprived of their
logical possibility.

The Logical Empiricist rejects this behaviouristic thesis.
According to his opinion, certain psychological statements are
employed which follow rules such as exclude the logical de-
pendence of these statements upon others referring to behaviour-
istic data.   For instance, if some one answers the question "what
do you see ? " with " I see blue ", this statement, according to
the Logical Empiricist, is logically independent of any possible
statements about space-time processes and in particular about
behaviouristic data.   Such a statement does not imply any
other empirical ones, it is not possible to derive other statements
from it by logical analysis alone.   This is not a contradiction
of the fact that, in science, " *empirical* " implication-relationships
are often constructed between psychological statements of the
above-mentioned type and other empirical statements.   We
know *e.g.*, *through experience* that the statement " I see blue ",
" implies " that certain physical measurements insure such and
such results, or that certain processes could be observed in the
optical nerves or in the brain of the person who made the state-
ment, etc.   The Empiricist wishes to emphasise that in such a
case, the K-statement " I see blue " can be true or false, entirely
independent of the truth or falsity of the statements which imply,
or are implied by it.

In agreement with this, the Logical Empiricist characterises
K-statements, such as, " I see blue ", " I feel pain " as follows.
Anyone making such a statement also knows if he has stated
a truth or an untruth ; he cannot make a mistake.   The obtaining
of these statements is at the same time their verification.   This
verification takes place through a non-behaviouristic process,
namely through the comparison of the statements with " ex-
periences ".   The meaning of such statements does not conform
to that of the behaviouristic statements which are usually declared
" empirically equivalent " to them.

The Physicalists believe that if empirical statements were
actually dealt with according to the above-mentioned rules, this
would lead to linguistic-logical difficulties.   If an individual
cannot be mistaken when making such a statement as " I feel

pain ", since he is not dependent upon the observation of any space-time processes for the verification of such a statement, then such a statement could only be understood by the person who made it, and consequently, would be in general incomprehensible. Such statements, however, are of no importance to science, since only statements intersubjectively comprehensible (verifiable) are of interest to scientists [1] and, accordingly, such statements as " I feel pain " are controlled in science exclusively through behaviouristic methods. Consequently, it is meaningless to ascribe another meaning to such statements than is found in the statements about the corresponding behaviouristic processes.

I have tried to show in several articles [2] that we can conceive of circumstances in which statements, such as " I see blue " can also be verified by others through a non-behaviouristic method. This *logical possibility* of a non-behaviouristic verification entitles us to ascribe an intersubjectively comprehensible meaning to the K-statements in question, and employ them according to rules which deviate from the rules governing the use of statements (always hypothetical) about space-time processes.

Another idea having a connection with our subject should also be considered here, which has likewise been brought up by the Physicalists. According to them, a series of signs such as "I see blue " has a two-fold character. In the first instance, this series of signs can always be conceived of as merely a symptomatic reaction of the individual uttering this statement, and in such a case the series is not a statement but rather an indicator of the same type as the positions of the pointer on a barometer, for instance. A description of this linguistic reaction in terms of space and time, which is naturally always possible, and of the conditions under which this reaction takes place, is thus nothing more than the meaning of the sequence of signs, " I see blue " ; *i.e.*, they are logically equivalent, in so far as the latter is considered as a statement. In that case, however, the statement is evidently a hypothesis and states, *e.g.*, the following : " my optical nerves are struck by light-rays of such and such a wavelength, whereupon my organs of speech perform certain movements, etc." When tested, this statement can naturally prove to be erroneous.

[1] Carnap has recently as regards these problems (*cf.* " Testability and Meaning " in *Philosophy of Science*, 4, 1, pp. 10-11) met his adversaries half way. He does not any longer consider it impossible to construct an intersubjectively intelligible language by combining appropriately several languages, which are intelligible subjectively only.

[2] *Cf.* Juhos, essays in *Analysis* 2, 6 and 3, 5, and in *Revue de Synthèse*, October, 1936.

This view is entirely contrary to that of the Logical Empiricists. Mention has already been made in the articles, cited above, of some of the cases in which our opinions do not conform to one another. I wish here only to discuss some additional cases. According to the Physicalists' viewpoint, the sign-complex for "I see blue", since it is a linguistic reaction, belongs to that series of space-time processes, which are described through the statement "I see blue." Let us call this statement p, and the sign for it "p". According to this point of view, p for instance has a different meaning depending upon whether "p" is spoken or written down, since the signs of the statement are a different process, in each case, but belong, in both, to the sequence of events which p describes. It is even conceivable that p, on occasion, should not assert anything else than that "p" takes place. If, for instance, some one asserts, "I see blue", and this sign-complex is the only space-time process which can be observed when testing this assertion, then the Physicalist would be entitled to say that in this case the statement says nothing more than that the signs mentioned were uttered in such and such a specified manner. If we accept this view, it is not possible any longer to employ the sign "p" as a signal, according to arbitrary rules, or to understand it as such a signal. This is possible only if the causal determination of the signal (the sentence), which naturally always exists, is not connected with the sequence of events described ; i.e., no causal relationship depending upon the laws of nature must exist between the two. Consequently, the conception of the Physicalists is proved incompatible with the principle of language-logic, according to which language is always a system of signs, which are used in accordance with arbitrarily determined rules. The Physicalists make of language a physical process, and, in respect to the above-mentioned statements, it is thus conceivable that through the mere observation of the sign "p" occurring in a single case, the statement p should be controlled and verified. In certain cases, every other method of verification can even be excluded. In contrast to this viewpoint, the Logical Empiricists retain, in the case of the above-mentioned propositions p as in all others, the linguistic-logical principle that signs of language are signals used according to arbitrarily determined rules, and thus, that language is always a system of logical relationships and never merely a physical process. As a consequence, it must always be conceivable in a language unobjectionable from the formal point of view, that a statement p can be presented through a sign "p", without "p" belonging to the processes about which p is speaking. If

the Physicalists' conception is adhered to, this possibility is excluded in regard to certain statements (such as " I feel pain ", our K-statements). According to the Logical Empiricists, there must at least be a logical possibility of presenting the statement p through a sign for the statement, " p ", in such a way that " p " is of no importance for the verification of p. If I make the statement, " I am speaking in a loud tone of voice ", it is true that the statement can be verified by observing the sign for this statement ; but it is also conceivable that I may have written down the statement, and then the signs for the statement are useless in the verification, although the statement did *not* acquire another meaning. (It is possible, naturally, by consciously not observing the principle of language-logic mentioned above, to construct statements which make an assertion about the signs through which they are presented. For instance, "*this* sentence is a sentence in the English language ". In English this statement is true, but translated into another language, it is false ; therefore, it is not translatable. In a language which only takes formal language-logical principles into consideration, such a statement could not be expressed.)

In K-statements it is more difficult to comprehend that the signs for statements function purely as signals, because the method of their verification is non-behaviouristic and, in practice, no intersubjective verification of such statements is possible. However, it can be gathered from a variety of circumstances that in psychology, as well as in daily life, the signs of these statements are used purely as signals.

If a person is heard to say, " I feel pain ", the rules of usage for this statement are such that whatever behaviouristic data are observed, they do not determine whether the person in question has told the truth or an untruth. This possibility already contains the assumption that the signs presenting the statement are not a part of the facts expressed by the statement. This fact is confirmed when it is noted that the statement, " I feel pain ", can be presented by signs of the most varied types, without changing its meaning. It is of no consequence if the statement is spoken or written, if formulated in German or English ; this could not be the case if the sign for the statement was a part of the behaviouristic reactions, which data alone are supposedly described by the statement.

In summarising, we wish to characterise the K-statements in the following manner. They are not hypotheses, *i.e.*, they can never be called erroneous. Whoever makes such a statement also knows whether he has told a truth or an untruth. They

cannot be made with the reservation that they are perhaps not true, and will eventually have to be altered. They can never be verified by comparing them with other statements but only through a comparison with " reality ", *i.e.*, by following a non-behaviouristic method. The consequences are as follows.

It can be seen through a consideration of the rules, according to which K-statements are employed in the language of every-day life, in psychology, or otherwise in the empirical sciences, that they do not permit us to assume that all empirical statements have the character of hypotheses. In regard to scientific system-statements (*Systemsätzen*), the mode of speech is possible that the statement S is an hypothesis, when considered in relation to other statements derived from it and less general, but at the same time it can also be called a non-hypothetical statement in respect to statements of a more general nature, which refer back to S, and can be justified by S. Such a two-fold character is not permitted by the rules of usage chosen for K-statements. Sentences of less general nature cannot be de-duced from a K-statement, nor can the latter be proved true or refuted by a comparison with other statements. The rules governing the usage of K-statements exclude the possibility that other statements exist in relation to which the K-statements could possess a hypothetical character. In contrast to this, all system-statements of a theory have hypothetical character in relation to K-statements. From the same rules there follows the inadmissibility of the mode of expression which states that *all* empirical statements, and therefore K-statements also, are only more or less probable. A K-statement is never a supposition, it always states something purposely true or false.

As has been already stated, K-statements can always only be verified by a non-behaviouristic method. I have shown in other articles,[1] that even in those cases where it is conceivable that a K-statement should be verified by persons who did not make it, this also can only be done by the help of non-behaviouristic data. As a result, the applicability of the physical space-time language as the only (universal) language of science is shown to be based on certain conditions. If our experience should prove that a complete parallelism exists between non-behaviouristic and certain corresponding physical processes, then, in general, a purely space-time description would suffice us. However, in such a case we could also not dispense with the

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[1] See the author's papers in *Analysis*, 2, 6 and 3, 5, furthermore an article in *Revue de Synthèse*, 12, 2, " Discussion logique de certaines expressions psychologiques ".

explanation that the respective physical statements are *only* empirically equivalent to certain K-statements, and cases are not impossible in which the uniformity of the language must be given up in favour of a non-behaviouristic mode of expression. For instance, after we had observed that we always assert the statement, " I see blue ", when certain processes take place in our brain, it would become acceptable in science to use, instead of the statement " I see blue ", the physical statement, " such and such a process is taking place in my brain ". This mode of speech, however, could only be used with the reservation that the K-statement still could be true under certain conditions, even if it was not " confirmed " by space-time data.

The universal language in terms of space and time, however, certainly does not suffice, where an empirical equivalence between K-statements and the corresponding physical statements has not been observed. It cannot be determined at present whether it will be possible at some time in the future to get along with space-time statements only in empirical science (naturally with the above-mentioned reservation). But even if we had to accept the fact that science from a logical standpoint could not give up its two-fold language, it would be wrong to come to the conclusion that it is then impossible to make meaningful and at the same time generally comprehensible statements about those processes which cannot be described by means of space-time concepts. As has been already mentioned above, this is asserted by the Physicalists. I have also mentioned that I have attempted to point out in several papers that it is logically possible that our K-statements should be verified by other persons in a non-behaviouristic manner. As soon as such a possibility exists, the statements are already intersubjectively comprehensible, no matter whether the conditions of verification are actually realised or not.

The Physicalists go still further, however, and attempt to prove that a statement such as " I feel pain " is also only meaningful for the one making the statement if it is interpreted as a statement about behaviouristic data. This view is based upon the idea, which in my view is erroneous, that such statements as the above can also be controlled afterwards, *i.e.*, they believe that the obtaining of the sentence and its verification are two separate processes. This is not the case in K-statements, and is also incompatible with the rules governing the employment of such statements, as I have explained in various places.[1]

Therefore, one must not simply assert that statements, which

[1] See note, p. 340, and the author's essays in *Erkenntnis* 4, 6 and 6, 1.

can only be verified through non-behaviouristic methods, are of no importance for science. Such statements can be intersubjectively comprehensible, as is actually so in the case of the K-statements. Consequently, they must be given a function in the system of all empirical statements, *i.e.*, in empirical science. What this function is will become evident when we examine the relationship of the K-statements to the "invariants" discussed in Part II. of this paper.

IV. K-STATEMENTS AND INVARIANT SYSTEMS OF STATEMENTS.

The distinction made by empiricism between language and reality is utilised chiefly on two occasions. As soon as the statement is made, "physical theories describe reality", this refers to a certain relationship, not fully to be characterised by formal properties, between theories following and superseding one another in the course of scientific development. Every physical theory contains as a part of it a system of statements which are confirmed through observations. We have mentioned that this confirmation and the respective observations are always made within certain limits of error. If a theory in physics is given up in favour of another, then the new theory takes over at least that part of the system of statements from the old theory (although perhaps expressed in another language) which agrees with observations, as explained above. If the new theory does not contain this system of statements, or only in part, then the old theory is not given up in favour of the new, but both theories are used in describing reality (for instance, wave theories and corpuscular theories in the description of certain atomic processes). Thus, every physical theory contains a system of statements which as an "invariant" is taken over into all future theories. And no formal criterion exists by which the invariant part could be singled out from a theory. The conformity with observation is alone the decisive factor here.

The second case where the Logical Empiricist distinguishes between language and reality, is in regard to those statements which can only be verified non-behaviouristically. K-statements are employed in a way making it impossible to verify them by comparison with other statements. The concepts appearing in such statements cannot be divided up any further, and thus with the use of logical rules of transformation only, no new testable statement can be obtained. It is a step in the wrong direction to wish to divide up and transform the statement, " I feel pain " in the following way, for example : " I " means " this man with

certain physical qualities ", " pain " means " such and such processes in the nervous system ".   According to this, the statement, " I feel pain ", could be translated into the statement, " such and such nerve-processes take place in the body of this man." This translation is wrong, because, in the statement, " I feel pain," the word " I " has no independent meaning, does not indicate an object ; it only becomes meaningful within the entire statement-context.   Furthermore, no processes in the body are meant by the word, " pain ".   Consequently, in accordance with our conception, K-statements can *only* be verified in a non-behaviouristic manner, through a comparison with reality. They are also obtained in the same way ; the process of obtaining them and verifying them is identical.

In regard to the " invariants ", we spoke of an agreement of a *system of statements* with " reality ", whereas in the case of the K-statements, the *single* statements are compared with " reality ". What sort of relationship exists between the K-statements and the invariant systems of statements ?

First, we note that whenever empirical statements are tested afterwards through observations, one always comes to a point where it must be ascertained if certain K-statements are compatible with statements which are deduced from the sentences to be tested.   Thus when the mode of expression is used that certain systems of statements are confirmed through observations, we find here also that at the basis of this confirmation are certain K-statements.   The derived statements, which can finally only be tested through a comparison with K-statements, can always be formulated in this manner.   " If I do such and such, then I shall obtain such and such a K-statement." We wish to call such sentences " *V-statements* ".   A verification is then completed in that I perform the acts prescribed by the V-statement, whereupon it appears whether I obtain the K-statement predicted or another K-statement.   Many V-statements can be deduced from an empirical system of statements, S.   Now, if a certain number of these are confirmed through K-statements, then a system of statements S′ (which is a part of S) can be constructed for the group of confirmed V-statements.   And this can be constructed in such a way that *only* the above-mentioned group of confirmed V-statements are deducible from S′, when the accuracy limits for the observations are given.   S′ is then an *invariant* part of the system S.   We can now understand the connection between the two modes of expression, " a *theory* is confirmed by observation, agrees with reality ", and, " certain *statements* are compared directly with observations, with reality, and verified

in this way ". K-statements are compared directly with reality,
in that they are verified according to a non-behaviouristic method.
Systems of statements agree with reality, if the V-statements
deduced from them are confirmed by K-statements.

The objection might here be made that " new " observations
are always " imaginable ", which could make it necessary to alter
or even to cancel an invariant system of statements ; that hence
it is not true that certain parts of statement-systems must neces-
sarily be taken over in an unaltered condition by physical theories
which supersede the previous theories. However, it must first
be precisely determined here, what is understood by possible
" new " observations. If a certain empirical regularity has been
observed, and presented by an invariant system of statements S',
this means that certain K-statements have confirmed the V-
statements, deduced from S'. It cannot be meant by the ex-
pression " new observations ", that under identical conditions
of observation, e.g., with identical experimental constellations, it
is possible to obtain in a quite irregular way at one time K-
statements falling within the limits of observational inaccuracy,
and at another time, outside these limits. In such a case, the
above-mentioned empirical regularity could not have been ob-
served at all, nor could the invariant system of statements have
been constructed. (Even in cases where only statistical regulari-
ties could be observed, invariants are possible logically in the
same way as in the case of non-statistical laws. In these cases,
however, a V-statement is of such a nature that it can only
be confirmed by a number of K-statements but not by a
single one.)

However, the expression " new " observational results, which
could lead us to give up an invariant system, might refer to those
K-statements which could be obtained through an improvement
in the means of observation. We have already mentioned in
Part II. that new theories, based upon results obtained through
improved means of observation, never exclude as false such old
theories as were confirmed through less exact observations.
The latter are still to be found in the new theories as " border-line
cases ", i.e., that part of the old theory which was confirmed by
certain K-statements is always deducible from the new system
by means of the so-called " method of omission (neglect) ".
A refinement of the observational process means that the limits
of inaccuracy have been reduced by changing the conditions of
observation. Under these new conditions, new K-statements can
be obtained, but they are of no relevance for the verified
" invariant " part-system of the old theory, because the state-

ments of the latter are meaningless with regard to the new limits of inaccuracy; they *do not* assert *anything* about these new observations. Certain V-statements can be deduced from a theory which give the conditions of observation under which K-statements should be obtained, and *only* the K-statements of observations obtained under these conditions are of consequence as regards the confirmation or refutation of the theory in question.

It is therefore impossible from a logical standpoint that new observations, *i.e.*, K-statements obtained under new conditions, could cause an invariant system of statements confirmed by certain K-statements, to be altered or given up. We have thus seen that there is a connection between the " non-alterability " of K-statements and the " invariance " of confirmed systems of statements. Since K-statements are employed according to rules which make it impossible for them to be called erroneous, they can neither be altered nor cancelled (except in the trivial case of their being lies). There can be deduced from systems of statements V-statements which assert that certain K-statements would be obtained under certain conditions. If I follow the V-statements and, in this way, obtain the K-statements concerned, this is then a confirmation of the V-statements and of the corresponding system of statements. A V-statement can be erroneous, and is proven such, if the K-statement predicted is not obtained under the conditions given in the V-statement. A system of statements, whose V-statements are confirmed by the respective K-statements, becomes "invariant ", *i.e.*, every system describing the sphere of facts concerned is obliged to include the invariant system. The latter must be deducible from the new system, either as a border-line case through omission of certain magnitudes or according to other rules of transformation.

Thus we believe we have been able to point out that Logical Empiricists are not attempting to be metaphysical, when they distinguish between language and reality. On the contrary, the distinction refers only to certain rules of usage for statements and modes of speech. Since we have investigated the rules of speech in empirical sciences, we are justified in calling our viewpoint " *Logical Empiricism* ". It is those statements and modes of speech specially characteristic of empirical science, whose syntactic rules of application we have analyzed. If, as the Physicalists do, we reject the syntactical peculiarities which distinguish the statements in question from the remainder of scientific statements, thus making all scientific statements uniformly hypotheses, then a view-point is advocated which, although

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based on logical and linguistic analysis, proves to be incompatible with certain modes of speech in empirical science. What they reject is a decisive feature of *empirical* description, namely the dualism in the employment of empirical statements. In view of the difficulties arising from this rejection, it seems to me that the Physicalists, Carnap and Neurath, have not based the empiricist character of their standpoint upon a sufficiently solid foundation.

IV.—MEANINGLESSNESS.

By A. C. Ewing.

In this article I intend to examine the conditions under which a sentence may be said to be meaningless. I have been stimulated to do so by a belief that present-day thinkers are often far too ready to dismiss a philosophical statement as meaningless, and particularly by my opposition to the theory that the meaning of all statements is to be analysed solely in terms of verification by sense-experience. (Note that only sentences can be properly said to have meaning, not propositions. A proposition is what certain sorts of sentences mean and cannot again itself have meaning except in a quite different sense of the word, such as that in which the " meaning " of something is equivalent to its implications. A meaningful sentence is a sentence which expresses a proposition, a meaningless sentence is a sentence which expresses no proposition. " Statement", on the other hand, is used both to stand for a proposition and for a sentence expressing a proposition. I shall use it in the latter sense. I am not hereby intending to imply that propositions are separate subsistent entities ; this is not a theory which I hold, but I have no time to discuss the question here.) In this article I shall use the term *positivist* for short to mean simply " upholder of any of the verification theories which I shall consider ". I shall use " meaning " in the same sense in which it would be used, say, in the *Strand Magazine*.

I shall first take the extremer form of the theory, according to which a statement is said to be verifiable, and therefore to have meaning, if and only if its truth could be conclusively established by sense-experience. " Sense-experience " is used to include (*a*) sense-perception, (*b*) introspection of images and emotions. Positivists would not usually admit that the occurrence of " mental acts " could be verified by experience, and would presumably have either to regard these as logical constructions out of sense-data and images, or deny their existence altogether. Still less would the term cover apprehension of " non-natural " properties or relations. Now I should have

thought the first duty of any advocate of a verification theory of meaning would be to inquire how his theory itself was to be verified, and I propose to be a good positivist in this one case at least and put the question myself. How could we verify the statement that all meaningful statements are verifiable ?

The first difficulty is that it is a universal proposition and therefore can never be conclusively established merely by experience ; but we shall relax the condition, as probably most positivists themselves would, so far as to allow of progressive and incomplete verification, and count the verification theory of meaning as verified for all practical purposes if an adequate number of samples of all the different kinds of meaningful statements we can think of are found on examination to be verifiable and we are unable to think of any which are not verifiable. I doubt the consistency of this but I will be as charitable as possible and let it pass. How could the theory then be verified in this sense ? It would no doubt be verified if we could take examples of all the different kinds of statements which have ever been made, find by direct inspection what was meant by them, and then discover that they were all verifiable. But I do not think the positivist would or could admit that we can always detect the meanings of statements by direct inspection. If we always can, why all the difficulties about analysis ? And it is not by any means sufficient for the purpose that we should *sometimes* be able to do so, for what has to be verified is a proposition about all, not about some, meaningful statements. I doubt in fact whether the positivist would even admit that meaning is the sort of thing that could ever be detected by direct inspection. Further, if we relied on the meaning that statements seem to have when we try to inspect their meaning directly, I do not see how we could ever become positivists. It is surely not by direct inspection of the propositions in question that a positivist learns that propositions about other people's toothache are really propositions about his own sense-data, or that so-called propositions about the past are merely rules for the prediction of those experiences in the future which would verify them. Surely they only come to such conclusions because they first assume the general principle that all meaningful statements are verifiable and then deduce that, since statements about other people can be verifiable only if they are analysed as statements about one's own sense-data, they must be thus analysed. No doubt they can find examples of meaningful statements which are directly verifiable. Perhaps even all meaningful statements on certain kinds of topics are thus verifiable, *e.g.*, all singular propositions about one's

present sense-data; but to argue that, because this is true of all of one kind of propositions, it is true of other kinds is as dangerous as to argue that because cats always live on the land, and cats and whales are both mammals, whales must also live on the land. Finally, I do not see how the positivists could establish the truth of their view even in a single case merely by sense-experience. For how can we ever know by sense-experience that there is not a part of the meaning of a statement that we cannot verify? The fact that we do not have any sense-experience of such a part proves nothing, since the point at issue is whether there is something in what we mean beyond sense-experience; and how can we know by sense-experience that there is not?

It therefore seems impossible that the verification theory could be verified in the way suggested, and I cannot conceive what other way there could be of verifying it. For according to the fundamental principles of those who hold the theory it could not be established by any sort of *a priori* argument, and therefore it must presumably be established, if at all, by the empirical examination of particular cases. Now, not merely is it the case that it has not in fact been verified in that way; we have just seen that it is logically impossible that it could be so verified. The statement that all meaningful statements are verifiable is therefore not itself verifiable. It follows that if it is true it is meaningless. But a sentence cannot possibly be both true and meaningless. Therefore the sentence in question cannot be true, but must be either meaningless or false. According to my view it is the latter.

Perhaps it will be said that, although the verification theory is nonsense, it is important and useful nonsense, while the kind of nonsense I talk is unimportant and useless nonsense. But if the statement that it is important and useful nonsense is to be accepted this statement in turn ought to be verified by sense-experience, and how that could possibly be done puzzles me. It might be held that it is useful because it helps to solve philosophical problems; but how can we tell by sense-experience whether a philosophical problem is solved or not? The mere fact that we do not feel an emotion of puzzlement does not prove that we have reached a solution. Otherwise unlettered peasants would have solved all philosophical problems far better than philosophers, and persistent neglect to think would be the golden method for attaining success in philosophy. Also the method prescribed might easily remove the emotion of puzzlement in some men but not in others, and be useful for some philosophical problems but misleading for others.

It might be suggested that the statement of the verification theory should be regarded as a tautology and therefore as meaningless only in the comparatively innocuous sense in which all correct *a priori* statements are meaningless according to the theory. But, if this line were taken, it would be necessary to show that some formal contradiction was committed by denying the theory; and this is not claimed. The only *a priori* propositions that the theory admits are analytic tautologies, if these indeed can be called propositions, but the statement of the theory itself is essentially synthetic. It gives new information, and information not capable of formal proof. The theory therefore cannot, if it is true, be known *a priori*. No *a priori* arguments for it are possible on its own showing since it is synthetic, and it therefore cannot be meaningful even in the modified sense in which a positivist might admit analytic *a priori* statements to be so. It can be meaningful only in the sense in which synthetic statements are supposed to be, *i.e.*, in the sense of being verifiable by sense-experience, and this I claim to have shown it can never be. It is true that it might be deduced analytically from some definition of meaning, but the definition itself must, like all definitions, be synthetic. A proposition giving an analysis must be distinguished from an analytic proposition, or, to put the same thing in different language, a proposition true by definition is not the same as a definition. There can be no self-contradiction in denying a given analysis of the meaning of a term unless some definition is already presupposed, thus begging the question; for there certainly is no analytic logically necessary connection between a word and the analysis of its meaning, and this undoubtedly applies to the word, meaning, itself. That certain marks or noises express propositions and others do not is surely a synthetic proposition if any is. No doubt a positivist can decide to use " meaning " in any way he chooses, but then he will not be giving an analysis of the ordinary sense of " meaning ", but inventing an arbitrary usage of his own. However this can hardly be what he is doing, for he certainly claims that those who use meaning in a sense in which unverifiable statements are meaningful are committing an error, attributing to certain statements a property they do not possess.

The positivist is thus debarred from giving *a priori* reasons for his theory because it is synthetic, and also from giving empirical reasons because it cannot be based on an empirical inspection of meaning. His only refuge is to make his theory a purely arbitrary convention which therefore requires no justification. But, if this is allowed, a philosopher may assert anything whatever

he pleases. The positivist is excused from having to prove his theory, but only at the expense of admitting that there is no more ground for accepting it than there is for accepting any theory whatever. Even such an argument as that it is simpler than other accounts or more useful for establishing deductive systems would be an appeal to a criterion conformity with which certainly cannot be discovered by sense-experience. And it remains true that his theory could mean nothing on its own showing, being neither an *a priori* analytic proposition nor one verifiable by sense-experience.

Now if a theory means nothing I really cannot be expected to refute it. Perhaps it is a very good lyrical expression of the positivist's emotions, but while not wishing to show any lack of sympathy towards his emotions I cannot see that this of itself could make it a useful contribution to philosophy. I add the autobiographical detail that I have never had any emotion myself of which it seemed to me at all a suitable expression. Or perhaps it is a command to treat only those propositions as meaningful which are verifiable; but with all due respect to the positivists I do not see why I should obey their commands unless they can show me that I (or the world) will gain by my doing so.

Let us now turn to the milder form of the theory which was sponsored by Mr. Ayer.[1] According to this a statement is meaningful if and only if it is logically possible that observations might be made which would be relevant to its truth or falsehood, *i.e.*, make its truth more or less probable. (He does not use the word probable here, but since he thinks no conclusive verification of anything is possible this must be what he means.) Now this formulation of the theory does not give Mr. Ayer nearly as much as he wants. For, with the possible exception of the ontological proof, which I do not wish to defend, it is doubtful whether any philosophers have ever asserted a proposition to the truth of which they did not think some experience or other was relevant. What I mean may be made clear by taking a few examples from among the most abstract of metaphysical arguments. The cosmological proof, for instance, starts with the premise that something or other exists, this being regarded as given in experience; the argument for an Absolute Mind including all human minds professes to start from the incomplete and incoherent character of our experience, which is held therefore to point to a more complete experience, and to be supported by citing the empirical facts of

[1] *Language, Truth and Logic*, p. 26. It must not be assumed that this expresses the present view of Mr. Ayer, who, I gather, has become less positivistic.

co-operation and love ; the realist view of physical objects claims to be based on the experience of perception either as in itself a proof of their existence (the direct theory of perception) or as a premise from which causal inferences can be made showing that they probably exist. No doubt in some of the cases I have mentioned the metaphysician may be wrong in thinking that experience renders his conclusion probable, but we can only decide whether this is so after we have examined and refuted his argument. Since he claims that experience is relevant we cannot dismiss his theory as meaningless without examination, as the positivist would like to do, merely on the ground that its probability cannot be affected by any experience. Most metaphysical arguments may be hopelessly wrong, but I do not see how we can tell whether they are except by examining them separately on their own merits, to see whether they can really be supported by experience. We cannot nonsuit all of them *en masse* by the positivist criterion without begging the whole question.

The statement that the world of sense-experience is altogether unreal, which is taken by Mr. Ayer as a good example of a non-sensical utterance, is certainly a statement to the truth or falsity of which experience is relevant, and it should therefore by his criterion have a meaning. For it is contradicted by all our sense-experience and therefore ought to be rejected as false (not meaningless), unless the man who makes it is speaking in metaphors. And, even if he is speaking in metaphors and does not mean " altogether unreal ", but *e.g.*, " incoherent when taken by itself " or " relatively unimportant ", his statement certainly claims to be based on the alleged self-contradictory or otherwise defective character of our sense-experience, and therefore the specific empirical character of our sense-experience is certainly relevant to it. Again take the statement that the whole universe was created by a morally perfect God. This would be held by Mr. Ayer to be meaningless, and would be generally admitted to be a metaphysical doctrine if anything is. Yet it is quite clear that empirical facts regarding the amount and distribution of suffering in the world will affect its probability. If we came to the conclusion that there was much more suffering in the world than we had thought and that there were hardly any empirical cases of suffering producing any good result, it would obviously make the truth of the belief in some degree less probable. Further the truth of the belief would increase the probability of some propositions about the future being true. For it would certainly at least increase the probability of the proposition that

I shall survive bodily death being true. Now the latter is a proposition which clearly could be verified and presumably will in fact be verified, if it is true. For if it is true I shall verify it by having experiences after bodily death. The metaphysical proposition about God is therefore one which is relevant to experiential propositions and to which experiential propositions are relevant.

Incidentally the question of survival seems to create a first-class puzzle for the positivists. That I shall survive bodily death is a proposition capable of future verification, if it is true, through my having experiences after death, but the contradictory proposition that I shall not survive bodily death could never by any possible chance be verified because I cannot experience myself as having no experiences. It seems then the positivist ought to conclude that the proposition that I shall survive death is logically necessary because the only alternative is meaningless. But that such a proposition should be logically necessary is obviously inconsistent with his theories; it is clearly synthetic. Therefore I fear he will not be as grateful to me as he ought to be for having shown that his theory has proved that we can never die.

Mr. Ayer has, therefore, not succeeded in giving a criterion which rules out metaphysics any more or less than the propositions he wishes to admit. Further in its second, as in its first, form it remains highly doubtful whether the verification theory can itself be verified. For we could only verify it by examining all the different kinds of meaningful statements and seeing whether sense-experience was relevant to their truth, *i.e.*, whether they could be proved or refuted by sense-experience or rendered more or less probable. But once a positivist has admitted, as Mr. Ayer has now done, that a statement may have meaning, even if it asserts something which cannot be directly experienced, provided only there could be experiences from which we might make legitimate inferences to the effect that its probability is increased or diminished, he is open to the objection that we cannot possibly learn from sense-experience alone whether an inference is legitimate or not. That B follows from A is not anything that can be sensed, and mere sense-experience cannot justify us even in thinking it probable that it will follow from A unless the sense-experience is accompanied by some principles of probable inference which are not themselves objects of the senses.

If I am right the verification theory is completely suicidal, because, if it succeeds, it shows itself to be meaningless, and therefore not true. But, even if you are not willing to go as far as

this with me, you must remember that philosophers have no right to assert a theory without reasons, at least unless they seem to themselves to see quite clearly that it is self-evident; and this cannot be so in the present case, for the positivist would certainly reject self-evidence as a criterion of truth and therefore cannot use it in defence of his own doctrine. Further you must remember that, unless a theory is proved with complete certainty, part of its criterion lies in the consequences which can be deduced from it, and if these are very unplausible they will cast doubt on the theory itself. To refuse to reconsider a theory of yours because it leads to absurd consequences is, unless the theory has been proved with certainty, not to deserve praise for being logical but to deserve blame for being prejudiced.

Now so far I have discovered no positive reason at all for accepting the theory in either form. It is not, as we have seen, established by direct inspection of the meaning of statements. Certainly nobody could learn by direct inspection of the meaning of statements about other people that these really only express propositions about his own sense-data, or that statements purporting to be about the past are really only statements about possible future events which might verify them. These doctrines are not data empirically reached and then used to establish the theory, but conclusions from the theory, which is already held to be established. But if so, what reason can be given for the theory ? Mr. Ayer refers the reader for proof to the chapter where he deals with the *a priori*. There indeed he claims to show that we can never know synthetic propositions *a priori*. I do not agree with him in this and do not see that he has offered any real ground for his conclusion, but even if his argument here were right it would not have shown that the alleged synthetic *a priori* propositions were really only meaningless statements. The statements may be meaningful for anything he has proved to the contrary, even if false or ungrounded. And again he has not proved that there might not be meaningful statements which, while not *a priori*, were unverifiable. The statement that you are having toothache, understood in the same way as the statement that I am having toothache, is certainly not *a priori*. Yet Mr. Ayer declares it to be nonsense on the ground that it is unverifiable, without having done anything at all, as far as I can see, to show that it could not be both meaningful and yet unverifiable. I do not agree with him that the statement in question is, according to his own criterion, unverifiable, for the probability of its truth is increased by observations which I certainly can make ; but then it seems to me, as I have said, that there are many

genuinely metaphysical propositions which would according to the *ipsissima verba* of his definition be verifiable.

It is sometimes asserted that the verification theory ought to be accepted because it is the only theory which provides a definition of meaning. But how do the positivists know that meaning is not indefinable ? Some terms must be indefinable, and such a fundamental term as meaning is surely one of the most likely terms to be so. Further, can the mere absence of an alternative definition of meaning be any possible justification for giving a definition of meaning which would make meaningless many statements that prior to the definition were held by everybody to have meaning ? If a definition does this it is, *prima facie* at any rate, not an account of the way in which the word defined is usually used by people. The definition has not made the *definiens* co-extensive with the *definiendum*, and can only be justified if an *independent argument* is given to show that in the cases where meaning is attributed to statements which cannot be verified the term *meaning* does not mean anything. If we are content to give definitions that cover only part of the extension of the term defined and then deny that the term as applied to the remainder of its extension has any meaning merely because otherwise it will not fit our definition, as the people who use this argument for the verification theory propose to do, we need never have any difficulty in finding definitions of anything ; but surely it is a more philosophic course to suppose that either the term is indefinable or a right definition has not been found yet than to be content with definitions of this kind.

Further this reminds me that I have not stated the verification doctrine in its most common form, simply because this form seemed to me even less plausible than the others and I wished to give my opponents a fair run for their money. As most usually stated, however, the theory asserts not only that no meaningful statements are unverifiable but that the meaning of a statement just is its verification (or its method of verification). And if we use the argument that we must have a definition of meaning and the verification theory is the only definition that has ever been suggested, we must conclude not merely that all meaningful statements are verifiable but that their verification (or method of verification) is identical with their meaning. Otherwise the theory would not be giving a *definition* of meaning. To this extremer form of the theory there seem to me to be two objections that are not applicable to the milder forms which do not actually equate verification with meaning but only use it as a test of meaning. The first objection is that verification presupposes

something which is verified, and this cannot itself be the verification but must be a proposition which cannot be reduced without residuum to its own verification. To say that what I mean in asserting a proposition is its verification seems to me parallel to saying " I lie " when what is said to be a lie is not a previous proposition but the proposition " I lie " itself. There is nothing to which the " it " in " its verification " refers unless there is a proposition to be verified over and above the verification of it. For what has to be verified is never the sentence but what it means. The sentence is a mere set of noises or black marks which occur and are experienced whether it is true or false, meaningful or meaningless.

Secondly, the belief in the occurrence of an event is very often verified by observing not it but its effects and concluding from them to the event as cause. It will follow that in these cases, if the meaning is identical with its verification, the event will be its own effects. Positivists abominate the entailment view of causation, but, if they were consistent with this definition of meaning, they would have to hold not only that the cause entails but that it analytically entails its effect. I think that an entailment view of causation is true, but even if I am right in this it is quite certain that the entailment, if present, must be synthetic not analytic.

Finally, even if there were reasons for a verification theory, I submit that, if it leads to such consequences as that propositions about other human beings are really only propositions about one's own sense-data, or that all propositions supposed to be about the past are really only about the possible future events which, if they occurred, would verify the propositions, this constitutes an objection to the theory which should outweigh even very strong arguments on its behalf. To me the conclusions in question seem absolutely incredible. Another objection to the theory is that the truth of some statements about metaphysics may be seen logically to entail the truth of others, but how could anything be entailed by a sentence which meant nothing ?

I do not believe in saying " Peace " when there is no peace, and so I have attacked the verification theory mercilessly, but I am not blind to its merits, which I shall now briefly mention. In order to understand a statement fully, it is, I agree, essential that we should have some idea as to the general kind of way in which it would be justified if it were true, and I am prepared to admit that it is often very useful to ask about a philosophical statement both—How could it be established if it were true ?— and—What difference, if any, would it make to experience if

it were true ? Sometimes to ask these questions may even lead us to the conclusion that the statement does not really express a proposition. For, I admit, it does sometimes happen that philosophers are led through verbal confusions into making statements which are meaningless. What I do refuse to admit is that *all* statements which cannot be established or refuted by sense-experience are meaningless. The asking of these questions may help us to get rid of some metaphysics, but not of all metaphysics. The great majority of metaphysical statements that have been made by philosophers in the past are, I think, false or ungrounded, but not meaningless. A few are true or near the truth.

This rejection of metaphysics comes from the unwarranted narrowing down of " justification " to " justification by sense-experience." If we want a criterion to determine when a statement has meaning, it is arguable that " verifiability " will do if we mean by this that a statement to have a meaning must be such that we can think of some conceivable method by which it might be supported (I think it is too strong to say " proved ") or refuted. But, even so, we are not justified in assuming that the only way of supporting a proposition must be by sense-experience or by inductive argument from sense-experience. Take the proposition that there is a necessary being. That would be proved by the so-called first cause argument if the latter were valid, and the verification of it in my wider sense would consist in going through the argument and seeing whether it was valid. The verification of its contradictory—There is no necessary being —would consist in seeing, as many people think they can see, that there are no existential *a priori* propositions. Suppose, however, we do not find either the argument for or the argument against the existence of a necessary being conclusive. The proposition will still be verifiable potentially if we can see what sort of argument would establish it if it were valid, or what sort of additional premises would be required to make the argument valid. Thus I might see that if we assumed that there was a reason for everything there must be a necessary being, *i.e.*, a being which is its own reason, but I might be uncertain whether we were justified in holding that there was a reason for everything. Again I might see that no *a priori* proposition I knew was existential, and yet be doubtful whether I could see positively that *a priori* existential propositions were impossible. In that case the proposition could still be said to be verifiable in my extended sense of verifiability because I could see what would make it true, just as a proposition about the other side of the

moon which we cannot practically verify is still said to be verifiable in the narrower sense of verifiability because we know the experience which, if it could occur, would verify it. I am not sure whether we need or can expect to have a criterion (still less a single criterion) for determining whether statements have a meaning, but if people *must* have a criterion I make them a present of this one. But why beg the whole question of epistemology by identifying verifiability with verifiability by sense-experience at the start ?

The positivist has no doubt also done philosophy a good service by carrying out the empiricist principle more consistently than even Hume. For a philosopher should try to investigate the consequences of any possible hypothesis and in particular should try to be an empiricist if he can and as long as he can, because we must not lightly assume the presence of an *a priori* synthetic element in knowledge where an empirical explanation will serve. But I should add that in working out the logical consequences of empiricism the positivist has provided its *reductio ad absurdum.*

Finally I am prepared to grant that we cannot form any idea of anything unless we have either immediately experienced it or it is a logical construction from what we have immediately experienced. Only I use " experience " in a wide sense according to which seeing that one proposition entails another or that something possesses the non-natural property, good, or being in immediate relation with God, will, if they occur, all be experiences. We can have no right to rule out such experiences in advance as impossible unless we know *a priori* that there cannot be any experiences which are not reducible to sense-experience ; and how the positivist could know this, especially on his theory of *a priori* knowledge, is quite beyond my power to conceive. Further, even if I were willing to narrow down experience to suit him, I should still maintain that he had gone too far. For even if we could not meaningfully talk about anything except qualities or relations given in experience in his narrower sense, and logical constructions from these, it would not follow that it was impossible to make significant statements which could yet not be verified by experience, since it is perfectly possible, for anything we can see, that the same quality actually experienced by us should also qualify existents which no human being, perhaps no being at all, could ever experience. And it is likewise possible that complex characteristics which we never experience may be constructed out of simpler characteristics which we do experience, and that these characteristics may

qualify existents which can never be experienced, at any rate by human beings, perhaps not at all. It may be very hard to justify any such assertions, but they are surely significant. If the positivist wishes to dispute this he must disclose some formal contradiction in the supposition.

Having rejected the verification theory of meaning, it is perhaps incumbent on me to give some account of the conditions under which verbal expressions could be said to be meaningless. This I shall now proceed to do. It seems clear that the following classes of expressions, at least, are meaningless.

1. There are sentences which express exclamations, wishes, commands, exhortations. These do not assert propositions, and therefore there is a sense in which they have no meaning, though no doubt in another sense they have a meaning since they can certainly be understood (or misunderstood). It is possible that a philosopher might confuse such a sentence with a sentence expressing a proposition and so utter a sentence which had no meaning, thinking it had a meaning, though I doubt whether this occurs at all frequently.

2. There are expressions such as *the table is beside* or *Cambridge is between York* which are meaningless because incomplete, *i.e.*, the form of the expression is such as to require an additional term to give it meaning and the additional term is absent. In the first example there is a dyadic relation with only one term, in the second a triadic relation with only two terms. There are, I think, cases where philosophers have uttered meaningless expressions of this type thinking they had a meaning. Thus no doubt some philosophers have thought that probability was a quality, so that you could say A was probable significantly without either asserting or understanding any data to which the probability of A was relative, while probability is really a relative term. (The statement, A is probable, made in ordinary conversation is not meaningless, because another term, *i.e.*, one's present data, to which the probability is relative, is understood if not expressed.)

3. An expression may be said to be meaningless if it includes some word or words which do not stand for anything. If the meaning of the word in question is complex, it might be said to be meaningless on the ground that it was self-contradictory, in which case it will come under a later heading ; but apart from this we might conceivably have a sentence containing indefinable or undefined words which stood, not for something self-contra-dictory, but for absolutely nothing at all. I do not mean merely " for nothing existent " but for nothing of which we have any

idea at all. I do not know any clear instances of sentences containing such words in any philosopher except Lewis Carroll, but it would no doubt be alleged by some philosophers that, *e.g.*, " subsist " as opposed to exist or " good " as used in *Principia Ethica* are examples.

4. An expression (we should hardly call it a sentence) might consist of words all of which had a meaning and yet be itself meaningless because the words were combined in a way contrary to the rules of syntax, *e.g.*, are of fond not dogs cats. The term *syntax* is used here in its strictly grammatical sense, not in the extended sense in which " grammar " is used by certain positivists. I do not know whether there are instances of such expressions in philosophical works excepting those due to momentary slips or misprints.

There no doubt are these four classes of meaningless expressions, but I come now to two other alleged classes of meaningless sentences, about which I feel a good deal of doubt. In fact I shall contend against most philosophers that they are not meaningless at all.

5. It is usually held that a sentence which ascribes to something a relatively determinate value of a determinable which does not qualify it is meaningless, whether the determinate value is asserted or denied of it. The most usual example of this cited lately at Cambridge is—Quadratic equations go to race-meetings, the example in my days at Oxford was—Virtue is a fire-shovel. It is generally held that such statements are not false but meaningless. It is further held that their contradictories,—Quadratic equations do not go to race-meetings—and Virtue is not a fireshovel,—are not true but likewise meaningless. This, however, I am prepared to dispute. For after all—quadratic equations do not go to race-meetings—is entailed by—quadratic equations do not move in space, and entails—quadratic equations do not watch the Newmarket horse-races ; but, if it is capable of entailing and being entailed, surely it must be a proposition and not a mere meaningless set of words. Again, surely you do really know that quadratic equations do not go to race meetings ? But how could you possibly know it if the words did not express a proposition, did not mean anything ? There would be nothing to know.

No doubt if I frequently made assertions such as—Virtue is not a fireshovel—or—Quadratic equations do not go to race-meetings, I should be in danger of being consigned to an asylum, and it may be asked why I should be regarded as a lunatic because I say what is true. The answer is that to qualify as a lunatic it is not necessary to say what is false or meaningless ; it is

sufficient persistently to say what is true in an unsuitable context. The proposition—2 *plus* $2 = 4$—is impeccably and indisputably true, but if I frequently asserted this proposition in unsuitable contexts, *e.g.*, whenever anybody asked me a question about something totally different, I should soon be regarded as a lunatic. Now the proposition that quadratic equations do not go to race-meetings is a proposition of such a kind that there is hardly any context in which its assertion is suitable. It is, I hope, suitable in this article, but this is certainly the first occasion in my life on which I have found it suitable to assert it, and most people go through their whole lives without finding such an occasion at all. Consequently the assertion of it outside philosophical gatherings would generally be regarded as a mark of insanity. The reason why the context is never suitable is because the proposition is so obviously true that it can never enter into anybody's mind to think of questioning it, and because, unlike 2 *plus* $2 = 4$, it also happens to be of such a kind that it can never, as far as I know, be used as a means of making inferences that are practically or theoretically useful.

The proposition that quadratic equations do not go to race-meetings belongs to a large class of propositions that may best be characterised as true but misleading. I shall give you another proposition that belongs to this class. The proposition is this— I did not commit more than six murders last week. This proposition, I assert, is true. I did not commit any murders last week, and therefore I did not commit more than six. But it is misleading because nobody would in fact ask whether I had committed more than six murders unless he assumed that I had probably committed some. Similarly, nobody would ask whether quadratic equations went to race-meetings unless he assumed that quadratic equations were at any rate the sort of things that could move in space. Other instances of true but misleading propositions are—I worked an hour yesterday (when I really worked eight), he has not stopped beating his wife (when he never started). No doubt there is an important difference between a proposition such as—Quadratic equations do not attend race-meetings—and the other examples I have mentioned in that it is logically impossible that quadratic equations should attend race-meetings while it is not logically impossible that, *e.g.*, I should have committed six murders last week. All I am suggesting is that the propositions are similar in being both true and misleading, not that they are similar in other respects.

To go a step further in absurdity, I might be asked whether I thought it true that purple quadratic equations do not attend

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race-meetings, this statement differing from the other one about quadratic equations in that not only the statement as a whole but the grammatical subject of it is self-contradictory. My answer would be that, if the statement is equivalent to—It is not a fact that purple quadratic equations attend race-meetings— it is true, if it is equivalent to—There are purple quadratic equations and they do not attend race-meetings,—it is false. In either case it is meaningful.

Not only should I say that the proposition—Quadratic equations do not attend race-meetings—is meaningful, I should say that its contradictory—Quadratic equations sometimes attend race-meetings—is meaningful though false. Certainly the reason which positivists sometimes give to explain why such statements are absurd seems to me untenable. They say that they are absurd simply because they recommend a usage of language different from the one which exists. I find it exceedingly difficult to understand this. It is surely just because the different words in the sentence are used in their usual senses that the assertion is absurd : if I chose to use " quadratic equations " to mean a certain breed of race-horses or " attend race-meetings " to mean " occur in examination papers," the sentence—quadratic equations attend race-meetings—would not be absurd but express a true proposition. If I were told that the person who uttered the sentence was using the words in an unusual sense I should indeed have to say that I did not know whether what he said was absurd or not till I knew in what sense he was using them. (No doubt the way in which he expressed what he meant might be absurd, but that is a different matter.) It is only if I am sure that he is not employing, and therefore presumably *not* recommending, a usage of language different from the ordinary one that I can deny off-hand the truth of his statement.

But, however that may be, the statement—Quadratic equations attend race-meetings—is self-contradictory, and most philosophers have held all self-contradictory statements to be meaningless. What about this sixth class of supposed meaningless expressions ? In this connection it seems to me significant that, while perhaps few people would hesitate to say that all talk about round squares or purple equations was meaningless, they would look on statements such as " an equilateral triangle is sometimes not equiangular " as false rather than meaningless. Yet if the first two are meaningless because they are self-contradictory, the third ought to be meaningless also ; for it is self-contradictory, though the discovery that it is so requires mediation.

Now no doubt there is a sense in which it seems reasonable

to say that all self-contradictory sentences are meaningless. If we try to think out what they mean we find we cannot combine the subject and predicate in thought. We cannot think what it would be like for quadratic equations to go to race-meetings or for squares to be round, nor can we really think an equilateral triangle as anything else than equiangular if the meaning of the word triangle as used by us is fixed by Euclid's postulates and we consider its implications. It may therefore be contended that we cannot think the meaning of a self-contradictory statement as a whole, though we know the meaning of the separate words.

But a self-contradictory statement does not say *how* the contradictory notions are to be combined, it merely says that they are combined somehow, and is that statement meaningless? If I know the meaning of " quadratic equations " and the meaning of " attending race-meetings," I may surely understand the meaning of the (false) statement that these two characteristics are sometimes combined, without having to achieve the impossible feat of combining them in thought myself. Do you understand the statement that 2547 plus 2691 = 5248 ? Surely. Yet on going through the sum you will find that the numbers have been added up wrongly and that therefore the statement is really self-contradictory. A mathematician who lived before a particular theorem had been proved could understand what was meant and view it not as a mere set of words but as a proposition even prior to finding the proof. Indeed if he did not first view it as a proposition he would not look for a proof. And, if so, he must equally be able to understand a statement which is later proved to be false but, at the time he contemplates it, has not yet been proved to be false. Now suppose later it is proved to be false. Surely this will not lead to his ceasing to understand it. If he understood it before he will continue to understand it while seeing it to be false. What could before be entertained as a proposition does not cease to be a proposition by being proved false. In fact if he did not understand it he could not see it to be false. The same will apply to propositions which are not only materially but formally self-contradictory, such as the proposition that the conclusion of a valid second figure syllogism can be affirmative.

These considerations seem to lead to the conclusion that even self-contradictory sentences are not therefore meaningless. I think that—quadratic equations attend race meetings—is a statement which we understand perfectly well and that it is only because we can understand it so well that we see it to be so obviously false. To see that it is true that equations do not

attend race-meetings is surely to see that it is false that they do. Some people would no doubt say that this sentence is meaningless while some self-contradictory statements, *e.g.*, the false statement about triangles mentioned above, are meaningful ; but if any self-contradictory statements are meaningful I do not see where to draw the line.   And after all you surely can understand the statement—it is self-contradictory to say that quadratic equations attend race-meetings,—but, if so, must you not equally understand its negative ?   It therefore seems to me that even self-contradictory statements are meaningful, at least in the most important sense of the term.

But it is time to bring this paper to a close.   The subject discussed is an extremely important one.   The positivists claim to settle once for all by a consistent use of their verification doctrine all the great philosophical issues of the past—the issues between empiricism and rationalism, realism and idealism, pluralism and monism, naturalism and theism, but before they have the least right to do this the verification doctrine must itself be justified.   My aim in this paper has been to show both that it cannot be true, because if it were true, it would be meaningless, which is self-contradictory, and that even if *per impossibile* it could be true there is no more ground for believing it than there is for believing the damnatory clauses of the Athanasian creed. If even only the second contention is right, it follows that the verification theory as a universal principle ought to be sternly dismissed from service in philosophical controversy and never used as the major premiss of an argument to show that various sentences uttered by opponents of the positivists are meaningless. For, even if it may be true, a " may be " without grounds is not enough for a philosopher.   We have no right to assume principles which are not self-evident and for which there are no reasons.   If a verification theory is to be made the basis of your philosophy there must be reasons given for it, and I want to know what the positivist thinks these reasons to be.

' KANT'S SO-CALLED COPERNICAN REVOLUTION.'

In the issue of MIND for April, 1937, Mr. F. L. Cross has performed a useful service in pointing out that Kant himself did not use the phrase ' Copernican revolution ' in his *Kritik der reinen Vernunft*, and that he did not *stress* the similarity between his own teachings and the doctrines of the *De Revolutionibus*. The latter point is hardly in need of argument, since the references to Copernicus are found only in the preface to the second edition and consist of three sentences, two of which are consigned to a footnote. His contention is more open to dispute when he avers that ' the reference to Copernicus at BXVII does not stand in any immediate relation to the main line of the argument '. By this he appears to mean that in this passage Kant asserts a similarity between himself and Copernicus only in one respect, namely, that each of them made trial of an alternative hypothesis when an earlier hypothesis proved unsatisfactory.

Such an interpretation manifestly makes the comparison unimportant; for in this respect Kant might equally have compared himself to almost any thinker. Curiously enough Mr. Cross admits— and indeed who could deny ?—that in BXXII n. the point of the comparison is much more precise. If this is so, the central contention of Mr. Cross makes little difference to the interpretation of Kant : it means merely that a really illuminating comparison is to be found in a footnote and not in the text. Personally I believe that Kant makes in the text the same point which he elaborates in the footnote, and it appears to me highly improbable that he should introduce into his text a comparatively pointless reference ' which does not stand in any immediate relation to the main line of the argument '. I also venture to maintain that this incidental reference is so illuminating as to justify the philosophical tradition according to which we speak of Kant's Copernican revolution, and indeed that this tradition is not without support from Kant's own expressions.

Mr. Cross is perfectly right in insisting that the revolutions in thought with which Kant at first compares his own have nothing to do with Copernicus. But if we are to understand the subsequent reference to Copernicus, we must first understand the character which is common to these revolutions. They are not merely revolutions, but revolutions of a very special kind.

Kant begins his preface in the second edition with a contrast between the sure path of science and a mere groping about. In so doing he is concerned with those cognitions which belong to the province of *reason*. Of these he considers logic to have followed from earliest times the sure path ; and its success he ascribes to its limitation, to the fact that it abstracts from the differences in objects and considers only the form of thought. Where reason has to do with objects, as in the sciences proper, its task is bound to be more difficult.

So far as reason is present in the sciences, there must be something in them which is known *a priori ;* and this pure part, whether great or small, ought to be examined separately. The two theoretical sciences with which Kant is here concerned are mathematics and physics, the former being entirely pure, while the latter contains both pure and empirical elements.

The early history of mathematics is obscure, but in the time of the Greeks it ceased to be a mere groping about and entered upon the sure path of science. It must have done so with difficulty, since reason is not here concerned, as it is in logic, merely with itself. The transformation must have involved a revolution, a revolution in our way of thinking (*Revolution der Denkart*). Whoever first demonstrated the nature of the isosceles triangle found that it was useless merely to follow with his eyes what he saw in the figure, or even to follow the elements thought in the concept of isosceles triangle by itself. Neither empirical observation nor analysis of concepts will help us to demonstrate any mathematical truth. We must employ instead what Kant calls the ' construction ' of concepts ; that is, we must exhibit *a priori* the intuition corresponding to our concept.[1] In the present passage the text is a trifle uncertain, but the discovery attributed by Kant to the earliest mathematician seems to be this—that it was necessary to produce the figure by means of what he himself *thought into it* and exhibited *a priori* in accordance with concepts ; and that to have certain *a priori* knowledge he must attribute nothing to the figure except what followed necessarily from what he himself had *put into* it in accordance with his concept.[2]

The essence of this revolution is that the mind is not concerned merely with the empirical object or with the concept derived from empirical objects by abstraction : it is concerned with its own act of construction, with what it *puts into* the figure in accordance with the concept. Our *a priori* knowledge in mathematics arises from the mind's cognisance of its own operations.

The case of physics or natural science (for Kant seems to include chemistry) is more difficult. Kant does not deal with what he describes as the pure part of physics, but considers science so far as it rests on empirical principles. Here the revolution—once more a *Revolution der Denkart*—is the introduction of the experimental

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[1] A713 = B741.   [2] BXII. Compare also A713-4 = B741-2.

method. What was it that those who introduced the experimental method discovered ? They discovered that reason has insight only into *what it produces itself in accordance with its own plan.*[1]   Here

also mere casual observation of objects will never give us a necessary law, and reason will never be content with anything else. Reason must approach nature with its own ultimate principles (such as are proved in the Analogies) and with the experiment which it has thought out in accordance with these principles : it is like a judge who compels the witnesses to answer questions formulated by himself. The revolution whereby physics ceased to be a mere groping about and found the sure path of science was due to the suggestion that our researches into nature should conform to what reason has itself *put into* nature.

Whatever be the difficulties of Kant's doctrine, it is abundantly clear that for him the revolutions in mathematics and physics had something in common other than the mere fact of being revolutions. In them the mind was somehow attending to what it itself *put into* its objects ; and in this way alone could it find that sure path of science which had been found so easily in logic because there from the first the mind was concerned only with itself.

It is in the light of this view that Kant approaches the method of metaphysics, which so far had been obviously a mere groping about with abstract concepts. The examples of mathematics and physics, which have become what they are by a sudden revolution, are sufficiently remarkable to make us reflect upon the *essential character* of this transformation in their way of thinking [2] and, if we can, to imitate them in this respect.[3]   Nothing I should have thought could be more obvious than that Kant is not merely looking for some sort of revolution in metaphysics : he is looking for a revolution which has the same essential character already described in the case of mathematics and physics.

What do we find ? Hitherto, Kant informs us, metaphysics has preceded on the assumption that all our knowledge must adjust itself, or conform, to objects [4] ; but all its attempts to acquire *a priori* knowledge of objects on this assumption have ended in failure. Kant therefore suggests we should at least try [5] whether we might not be more successful if we assumed instead that objects must adjust themselves, or conform, to our knowledge. This assumption already seems to agree better with the possibility which we desire, namely, the possibility of an *a priori* knowledge which should establish something about objects prior to their being given. The proposed revolution in metaphysics is in short to follow the line

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[1] BXIII.

[2] BXVI. It should be noted that ' revolution ', formerly described as ' *Revolution der Denkart* ', is here equated with ' *Umänderung der Denkart* '. This will be important in the sequel.

[3] ' *hierin* '.   [4] ' *sich nach den Gegenständen richten* '.

[5] ' *versuche* '.

suggested by the revolutions in mathematics and physics : it too is to consider whether the mind may not ' put something into ' its objects or impose upon them certain necessary characteristics.

At this point [1] the first reference to Copernicus is introduced. Kant's suggestion is on precisely the same footing as the first thought of Copernicus.[2] After Copernicus was unable to make satisfactory progress with the explanation of the movements of the heavenly bodies when he assumed that the whole army of stars revolved round the spectator, he tried [3] whether he might not succeed better by making the spectator revolve and the stars remain at rest. And Kant adds that in metaphysics we can make a similar experiment— *In der Metaphysik kann man nun . . . es auf ähnliche Weise versuchen.*

Mr. Cross maintains that this comparison ' does not stand in any immediate relation to the main line of the argument '. It means only that when one hypothesis fails we should try another, as Copernicus did. To say this is to empty the words ' *auf ähnliche Weise* ' of significance, and to make the whole comparison flat and feeble and, in my opinion, most unlike Kant.

Why, on this view, should Kant drag in Copernicus at all ? He has already given us, in his account of the revolutions of mathematics and physics, sufficient examples of adopting a new method when the old one fails. But, as we have seen, in each case the new method was of the same kind, the method of attending to what the mind *puts into* its objects. It seems to me as clear as day that Kant here is looking for a comparison which will illustrate his central thesis, and in so doing he is singularly successful. Mr. Cross simply ignores the precise description which Kant gives of the hypothesis abandoned by Copernicus and of the hypothesis put in its place. In explaining the movements of the heavenly bodies Copernicus abandoned the view that the movement was in the objects and adopted the view that it was in the spectator. The movement in short is, on the new hypothesis, *put into* the stars by the spectator. The parallel is not vague and empty and unimportant. It is definite and precise.

It seems to me impossible to suppose that Kant hit upon so precise a parallel without knowing what he was doing. No doubt he is saying, as Mr. Cross maintains, that we must make trial of a new hypothesis ; but this does not affect the fact that the new hypothesis is to be one of a definite, and indeed a revolutionary, kind.

The arguments by which Mr. Cross seeks to deny more than the vaguest parallelism are unconvincing. On the strength of an examination of other analogies in this brief preface he avers that Kant would not have used the word ' *drehen* ' of the heavenly bodies in

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[1] BXVI.

[2] ' *Es ist hiermit ebenso, als mit dem ersten Gedanken des Kopernikus bewandt* '. Note the word ' *ebenso* ', which I have translated as ' precisely '.

[3] ' *versuchte* '.

Copernicus' theory, and the word 'richten' of objects in their relation to the mind. But there is no comparison between the turning of the heavenly bodies and the conformity of objects to the mind. Kant's point is that the apparent characteristics of objects are to be ascribed hypothetically to the mind of the knower as Copernicus ascribed the apparent motions of the stars to the observer.

The further 'confirmation' alleged by Mr. Cross is even weaker. He appears to suggest that a thinker of Kant's eminence, when he made the commonplace point that hypotheses are useful as a means of scientific progress and that Copernicus afforded an example of this, had probably in mind a passage from Wolff on which he had lectured 27 years before ! Kant was in need of no such inspiration. To assume first that the reference to Copernicus is based on this passage, and then to argue that therefore the reference to Copernicus cannot mean more than is contained in this passage—this seems to me to have no weight at all.

It may be observed further that the rest of the preface confirms the special character which, as I have maintained, is to be found in all the revolutions described by Kant and also in the comparison with Copernicus. The experiment made by Kant in metaphysics, after the example of Copernicus in astronomy, concerns intuitions, categories, and the Ideas of reason—the subject matter respectively of the Aesthetic, the Analytic, and the Dialectic. Kant's hypothesis is that the object (as an object of sense) must conform to the character of our power of intuition, and that the object (as an object of experience) must conform to the categories. This, he hopes, will explain how we can have a priori knowledge of objects. As to the Ideas of reason, they are in a different position, but the attempts to think objects by their means will test the new method in our way of thinking, namely, the hypothesis that we know a priori of things only what we ourselves put into them.[1]

On Kant's view this revolution in thought will put the first part of metaphysics (in the Analytic and perhaps in the Aesthetic) on the sure path of science. It will also produce the surprising conclusion that we can have no knowledge of things as they are in themselves but only of things as they appear to us. This will be confirmed by the Dialectic, which will show that, if we adopt Kant's revolutionary hypothesis, the contradictions which otherwise arise in reason will disappear. At the same time a place—the realm of unknown things-in-themselves—will be left open for a subsequent filling through the practical data of reason.

At this point [2] Kant introduces his second reference to Copernicus. But before we consider this, attention should be called to some illuminating remarks in the paragraph which follows. The whole business of the Kritik der reinen Vernunft can be described as an experiment or attempt or trial [3] to transform [4] the previous procedure of metaphysics, and to do so by making a complete revolution in it

[1] BXVIII.　　　[2] BXXII n.　　　[3] 'Versuch'.　　　[4] 'umzuändern'.

according to the example of the *mathematicians and natural scientists*. This seems to me to show that the revolution or transformation in question is not just any revolution, but a revolution of that specific kind which I have described. Its character is indicated once more by the statement that in *a priori* knowledge nothing can be ascribed to objects except what the thinking subject derives from itself. This is the reason why metaphysics, alone among the sciences concerned with objects, can have that kind of completeness which has already been attained by logic, a science which, as we have seen, attains completeness because in it the mind is concerned only with itself. We may, perhaps we must, disagree with Kant, but at least he has made his meaning abundantly clear.

But let us return to the second reference to Copernicus which is relegated to a footnote.[1]

Here Kant's aim appears to be to find further parallels between his procedure and that of Copernicus. He has just explained, and he repeats here, that his hypothesis is proved in the Aesthetic and Analytic ; he has also explained that it is confirmed by the Dialectic and leaves open a region to be filled by practical reason. Similarly the central laws of the motions of the heavenly bodies—I am not sure what they are—made absolutely certain what Copernicus to begin with assumed only as a hypothesis. At the same time these laws also proved the invisible force of Newtonian attraction which holds the universe together, a force which would never have been discovered apart from the theory of Copernicus. The precise point of this second statement is less clear. Does Kant perhaps mean—if this is not too fanciful—that this invisible force corresponds in some way to that realm of unknown things-in-themselves which is left open by his doctrine for the occupation of practical reason ? In any case Kant in his preface puts forward his transformation in our way of thinking as a hypothesis only (in spite of the fact that it is to be proved later) in order to make clear the character of these first attempts at such a transformation, which are always hypothetical—as should indeed be obvious to anyone.

These statements offer little difficulty. More importance is to be attached to certain incidental observations which I have so far omitted. By good luck for us Kant describes again what he regards as the Copernican hypothesis [2] and, I will now make bold to add, the Copernican revolution. The force of attraction, he says, would never have been discovered if Copernicus had not ventured, in a manner contrary to the witness of the senses and yet true, to seek the observed motions, not in the objects in the sky, but in the spectator. Even Mr. Cross recognises the point of Kant's analogy in

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[1] BXXII n.

[2] Why Mr. Cross says Kant does not appear to use the expression ' Copernican hypothesis ', I fail to understand. Kant at least speaks of ' that which Copernicus to begin with assumed only as a hypothesis ', and he refers to it later as ' that hypothesis '. Do we really require more ?

this statement, but he regards it as an afterthought. To my mind it is a repetition in another form of what Kant has already said in the body of the text.

In the light of this are we justified in speaking of Kant's Copernican revolution ? I think we are. It is true that Kant does not use the phrase. It is also true that the hypothesis of Copernicus, although in a sense it set astronomy on the sure path of science, is not itself an example of the revolutions ascribed by Kant to mathematics and physics. So much we may grant to Mr. Cross. But does Mr. Cross demand that Kant should actually have said in so many words ' my Copernican revolution ' ? Kant expresses himself more modestly. He entertains the hope that his own revolution or transformation in our way of thinking—for it must be remembered that Kant uses these phrases [1] as equivalent to one another—will do for metaphysics what other revolutions of a similar type have done for mathematics and physics ; and he says expressly that his transformation (or revolution) is *analogous* to the hypothesis of Copernicus.[2] The analogy lies surely in the fact that they are both revolutions of the type already described—they seek in the spectator what others have supposed to be found merely in the object. This is what we mean when we refer to Kant's Copernican revolution, and it seems to me we have ample warrant for doing so.

Such is the doctrine which Professor Kemp Smith made clear in his *Commentary* and reinforced by quotations from Copernicus himself. Mr. Cross is inclined to doubt whether Kant was familiar with the *De Revolutionibus*. He doubts this on the very inadequate ground that ' if Kant had studied the treatise at first hand there would be more plentiful references to both Copernicus and the *De Revolutionibus* in his writings than there appear to be '. In view of the special interest which Kant took in astronomy the suggestion that he had not studied the *De Revolutionibus* seems to me initially improbable ; and although what Kant says might have been said by a man of his intelligence from a merely general knowledge of the Copernican theory, the parallels adduced by Mr. Kemp Smith seem to me far too close to be thus lightly set aside. They prove at any rate that Copernicus understood his own revolution in the same way as Kant understood it. The history of Kantian scholarship shows how few students of Kant have displayed a similar insight.

H. J. PATON.

[1] ' *Revolution der Denkart* ' and ' *Umänderung der Denkart* '.
[2] BXXII n.

THE PRINCIPLE OF VERIFIABILITY.

It is the contention of Mr. Ayer that a great many philosophers, who are concerned with the analysis of a special class of sentences ordinarily thought to belong to philosophy, are unwittingly concerned with sentences having no literal significance. A sentence s in a given language L may be defined, roughly, as a sequence of words from L satisfying certain formal conditions, called rules of grammar of L. And it is, of course, a matter of fact that not all sentences constructable in L, *i.e.*, not all sequences satisfying the set of *formal* sentential conditions of L, will be literally significant. The proper sub-class k of sentences in L purporting to express contingent propositions, *i.e.*, the class k of sentences of such a form that if they did express propositions in L they would express contingent propositions only, divides into two mutually exclusive sub-classes :

C_1, the class of k-sentences which have literal significance ;
C_2, the class of k-sentences which lack literal significance.

In *ordinary* discourse, wherein the purpose is to " communicate ", people hardly ever make the mistake of expressing themselves in sentences of C_2 instead of in those of C_1. According to Mr. Ayer, however, a great many philosophers have laboured under the illusion that a special sub-class C', of C_2, of seemingly philosophical k-sentences, is included in C_1, and in being concerned with the analysis of sentences of C' have simply devoted their time to the " production' of nonsense ". The philosophers supposedly guilty of this confusion are called " metaphysicians ", and the sentences of C' with which they are concerned are called " metaphysical sentences ".

A criterion other than a strictly formal one seems required in order to test whether a given k-sentence is literally significant. And Mr. Ayer presents such a principle, formulated by the so-called Vienna School of Positivists and modified in several respects by himself, which " enables us to test whether a sentence expresses a genuine proposition about matter of fact "[1], *i.e.*, a criterion by the application of which it can be ascertained whether a given k-sentence belongs to C_1 or to C_2. This is the Principle of Verifiability, namely: " . . . A sentence is factually significant to any given person, if, and only if, he knows how to verify the proposition which it purports to express—that is, if he knows what observations would lead him, under certain conditions, to accept the proposition as

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[1] A. J. Ayer, *Language, Truth, and Logic*, p. 19.

being true, or reject it as being false ".[1] In connection with this principle Mr. Ayer goes on to say: " If on the other hand, the putative proposition is of such a character that the assumption of its truth, or falsehood, is consistent with any assumption whatsoever concerning the nature of his future experience, then, so far as he is concerned, it is, if not a tautology, a mere pseudo-proposition. The sentence expressing it may be emotionally significant to him, but it is not literally significant ".[2]

In this paper it is not my purpose to investigate whether metaphysical sentences do in point of fact lack literal significance. My purpose here is to inquire whether the Principle of Verifiability (to be called P.V. for short) *is* a criterion of literal significance, such as to enable us to determine with regard to any k-sentence s whether it belongs to C_1 or to C_2. That is to say, I propose to inquire whether by the use of P.V. we can *test* whether s " expresses a genuine proposition about matter of fact ".

Obviously, P.V. is designed to apply, as a test of literal significance, to k-sentences alone, since empirical verification relates exclusively to non-analytic propositions, namely to propositions expressed by k-sentences. And, in accordance with P.V., whether a given k-sentence s is literally significant, is to be determined by reference to the proposition p it expresses. In other words, s is to be tested for its significance by testing whether p, expressed by s, is verifiable, where, according to P.V., s is significant if p is verifiable and is non-significant if p is not verifiable. In the latter case p is said to be a " pseudo-proposition ". A division of the class, h, of non-analytic propositions expressed by k-sentences, according to which some will be " genuine " and others will be non-genuine, or " pseudo ", seems thus to be required :

h_1,   the class of verifiable h-propositions ;
h_2,   the class of non-verifiable h-propositions.

The classes h_1 and h_2 would seem to exhaust between them the class of h-propositions.

P.V., it can be seen, is constructed upon this distinction between h-propositions. Expressed in the logical notation of *Principia Mathematica* it reads as follows [$s = k$-sentence variable, $p = h$-propositional variable, $\phi(p) = p$ is verifiable, $\psi(s) = s$ is literally significant, $e(s, p) = s$ expresses p] :

P.V., $(s, p) : . e(s, p) . \supset : \phi(p) \supset \psi(s) : \sim \phi(p) \supset \sim \psi(s),$

that is to say : For all values of s and p if s expresses p then if p is verifiable s is literally significant and if p is not verifiable s is not literally significant. P.V. contracts into

$$(s, p) : e(s, p) . \supset . \phi(p) \equiv \psi(s).$$

[1] A. J. Ayer, *Language, Truth, and Logic*, pp. 19-20.   [2] *Ibid.*, p. 20.

An important thing to note here is that P.V., if indeed a criterion of k-sentence significance, does not itself   provide a test for ascertaining whether a given k-sentence s' expresses a proposition ; it does not enable one to test with respect to s' whether

$$(\exists p) \, . \, e(s', \, p).$$

At most P.V. enables one to decide whether s', *given a p* which it expresses, is literally significant. For whether s' is literally significant is, according to P.V., testable only by reference to the *proposition* it expresses (if it does express one) ; such that if s' fails to express a proposition there will be nothing concerning which it could be ascertained whether *it* is verifiable, with the consequence that P.V. could not be supposed to provide a test for ascertaining whether s' is literally significant. In case the matrix upon which P.V. is constructed, namely

P'.V'., $e(s, \, p) \, . \, \supset \, . \, \phi(p) \equiv \psi(s),$

is applied to an s',[1] with regard to which it is the case that

(1) $\sim (\exists p) \, . \, e(s', \, p),$

P.V. will be satisfied *vacuously* only.   For (1) entails

$$(\exists s) : \sim (\exists p) \, . \, e(s, \, p) \, . \, \sim (\phi(p) \equiv \psi(s)),$$

which entails both

$$\sim (\exists s, \, p) : e(s, \, p) \, . \, \sim (\phi(p) \equiv \psi(s))$$

and $\sim (\exists s, \, p) : e(s, \, p) \, . \, \phi(p) \equiv \psi(s) \, ;$

and thus (1) entails the *vacuous* satisfaction of P.V.   In such a case the application of P'.V'. would, clearly, leave us unable to decide whether s' was literally significant. Applications of this sort will here be called vacuous ; and plainly, then, the *non-vacuous* application of P'.V'. to k-sentences presupposes that the k-sentences which are selected do express h-propositions. Consequently, *antecedent* to the application of P'.V'. to a k-sentence s', it must be determined whether s' expresses an h-proposition. The condition, I, that there exists an h-proposition p expressed by s' is not part of P.V., but is presupposed as a condition which must be satisfied if P'.V'. is to be given non-vacuous application.

The condition in P.V. which condemns s as being non-significant, or as belonging to C_2, namely that p is not verifiable, will here be called the condition of α-nonsense. An α-nonsensical sentence will, accordingly, be a k-sentence which expresses an h_2-proposition. Provided there is such a kind of nonsense as α-nonsense, it does not seem to me, however, that the class of C_2-sentences is completely exhausted by the class, k_2, of sentences having α-nonsense. It

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[1] This, of course, is what is meant by " application of P.V."

would seem that k_2, if a non-empty sub-set of C_2, is only a proper sub-set of it, and that there is another non-empty sub-set, k_3, of sentences of C_2 which are nonsensical but are not α-nonsensical. It is obvious that sequences satisfying the L sentential conditions for belonging to k can be constructed in L and yet be such as to fail to express propositions, pseudo or otherwise. Such sentences will have the logical form of k-sentences, such that if they did express propositions they would express non-analytic, or h, propositions only, but, nevertheless, will fail, as *unitary* expressions, or as *sentences*, to express any proposition at all. To the *separate words* of such a sentence, s, there may correspond items of meaning or significance, but to the sentence, taken as a *single*, or *unitary*, expression, there will correspond nothing which could be taken as the proposition, pseudo or genuine, expressed by s. For example, to the individual words of the sentence " Ethiopians are heavier than $\sqrt{2}$ " there do correspond items of literal significance, formal or material, but to the sentence itself there corresponds nothing which could be apprehended as the proposition expressed by it. Such k-sentences will here be called β-nonsensical sentences.

The existence of sentences having β-nonsense will, I think, be admitted by everyone. Consequently, in accordance with P.V. which entails the distinction between k-sentences having literal significance and those having α-nonsense, a distinction between two *kinds* of nonsense is necessitated, namely that between α-nonsense and β-nonsense. We may therefore divide the proper sub-set C_2 of the class of k-sentences into the following two mutually exclusive sub-classes :

k_2,   the class of C_2-sentences which express pseudo, or non-verifiable, h-propositions ;

k_3,   the class of C_2-sentences which express no propositions whatever.

I.e., " s is a member of k_2 " is equivalent to

$$(\exists p) \cdot s \epsilon k \cdot e(s, p) \cdot \sim \phi(p) ;$$

and " s is a member of k_3 " is equivalent to

$$\sim (\exists p) \cdot s \epsilon k \cdot e(s, p). \quad .$$

The class of k-sentences thus divides into the mutually exclusive, though perhaps not completely exhaustive, sub-classes C_1, k_2, and k_3. It is to be noted that C_1 and k_2 have a defining property in common, which is that the sentences of each class express propositions, pseudo or otherwise.

As has been already pointed out, in order to insure that any particular application of P'.V'. be non-vacuous, the k-sentence to which P'.V'. is to be applied must be so selected as to satisfy I. It is clear, for this reason, that as a non-vacuous principle of literal significance P.V. provides a test for sentences of C_1 and k_2 only, and

fails to provide one for those of k_3. At best, then, P.V. would not furnish a test sufficient for deciding whether *any* given k-sentence is literally significant.

It will be clear now, were it the case that all non-significant k-sentences are β-nonsensical (and to speak of α-nonsense is to speak in a confused way of β-nonsense), that P.V. would be no criterion at all for determining whether a given k-sentence is literally significant. For in that case *all* h-propositions would be genuine, and " *h-proposition* " and " *genuine h-proposition* " would be synonymous expressions. And since, *prior* to the application of P'.V'. to a given s it would have to be determined whether s fulfilled condition I, it would at the same time be ascertained whether s was literally significant, *without the use of P'.V'.* For then the determination that s did satisfy I, or that s did express an h-proposition, would be equivalent to the determination that s was literally significant; and the determination that s failed to satisfy I would be equivalent to the determination that s lacked literal significance. P.V. would then become completely useless, if not nonsensical, as being constructed on a non-significant distinction.

Since P.V. is constructed upon the (supposed) distinction between genuine and pseudo h-propositions, such as to become inoperative as a criterion of k-sentence significance without it, it becomes pertinent to investigate this distinction, and to consider what precisely Mr. Ayer means by " pseudo-proposition ". If the designation " pseudo-proposition ", or non-verifiable h-proposition, is to be taken quite literally, " s expresses a pseudo-proposition p " translates into " s expresses an h-proposition p which *seems* to be an h_1-proposition but which actually is an h_2-proposition "; *i.e.*, " s expresses a pseudo-proposition p " entails

$$(\exists p) . e(s, p),$$

where p *seems* to be an h_1-proposition, in virtue, it may be supposed, of having certain properties which h_1-propositions do have, but is not an h_1-proposition, though it is an h-proposition, because it lacks another property which they all do have, namely the property of being verifiable. Such propositions, he claims, are " not even false but nonsensical " [1]. But of what sort such *propositions* would be except to be *unthinkable* propositions is certainly not easy to see. It is to be noted that the supposition to the effect that s both *lacks* literal significance and expresses a *proposition* p of a special kind (by virtue of which it lacks literal significance) *is* equivalent to the supposition that p is an *unthinkable* proposition, and therefore is a patently absurd supposition to make. It must for this reason be supposed that s fails to express any proposition whatever.

The same result also follows from this further consideration : Any non-analytic proposition p, and therefore in particular any h_1-proposition, will obviously be a *description* of the so-called real

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[1] A. J. Ayer, *Language, Truth, and Logic*, p. 26.

world,[1] such that the truth-value of p will be contingent upon the existence of a state of affairs of the kind ϕ, asserted by p. An h_2-proposition q, which is "not even false but nonsensical", will, however, fail to be a description, not only of an actual state of affairs but even of a *theoretically possible* state of affairs. For since q is supposed neither true nor false, q could not possibly describe a state of affairs, the existence of which would render q *true* and the non-existence of which would render it *false*. Hence, whereas a C_1-sentence will express a proposition which could be apprehended as asserting or denying the existence of a state of affairs of some kind ϕ, and which therefore could be apprehended as a descriptive complex, a k_2-sentence s, which in L could only express a non-analytic proposition q (if it expressed a proposition at all), will on the other hand express nothing which could be apprehended as asserting or denying the existence of a state of affairs of some kind ψ. For this reason, an h_2-proposition q could not be a descriptive complex. This together with the fact that s, if it expressed anything at all, could express a descriptive proposition only, entails that s expresses no proposition whatever.

It would seem plain that no tenable distinction can be made between h-propositions, according to which some are genuine and others are pseudo. All *h-propositions* must be supposed genuine. And *all* k-sentences which lack literal significance must be held to be β-nonsensical. Consequently no such distinction as that between α and β nonsense, from which it would follow that k_2-sentences express unthinkable h-propositions and k_3-sentences express no propositions, can be made. Without exception, k-sentences will lack literal significance because they are β-nonsensical.

This, I believe, will be admitted by everyone. No one, if he thinks clearly about it, would insist upon a distinction between non-analytic propositions, some of which will be thinkable and others unthinkable. It seems to me that in saying a given k-sentence s expresses a pseudo-proposition Mr. Ayer is simply misled by the language he uses, and it is not difficult to see the kind of confusion he may be making. It does not seem to me that he wishes to say, or at any rate that he should say, of a given k-sentence s which lacks literal significance that it expresses a proposition. What he should intend to mean by " s expresses a pseudo-proposition " is " s *seems* to express a proposition but actually does not ". It is not difficult to see how one might pass from " s expresses nothing thinkable " to " s expresses something unthinkable ", and then suppose that s does express something. And similarly it is an easy matter to identify " s seems to express a proposition but actually does not " with " s expresses a pseudo-proposition ", and therefore to suppose that the first statement entails that s expresses a proposition.

The primary cause for making such a confusion is perhaps the

[1] L. Wittgenstein, *Tractatus Logico-Philosophicus*, 4·01, 4·023.

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following : The separate *words* of a sentence *s* which lacks literal significance may themselves possess literal significance, or express items of meaning, such that *separately* they could occur in sentences which are literally significant, but which in *s* fail of literally significant synthesis, though not of formally significant synthesis. It is not difficult to see that because this is the case with regard to the separate *words* of *s* it might be supposed that, at a minimum, *s* expresses *something*, ϕ, which is the meaningless combination of the separate items of meaning of the separate words. That is, it may be thought that to the sentence *s*, as a linguistic *unit*, there corresponds a *unit* of non-significance which is the proposition expressed by *s*.

Obviously, however, even though the *words* of a sentence *s* singly express items of meaning, *s* itself, as a *single* expression, or as a *sentence*, may express nothing *unitary* at all ; and in such a case *s* will express nothing which could be apprehended as the propositional unit of nonsense which supposedly it does express. This seems plainly to be the case in regard to *all k*-sentences lacking literal significance. Hence, as regards such sentences, there will be no apprehendable propositional unit concerning which the question of verifiability could possibly be asked. And if this is the case, P.V. cannot be taken as a criterion for determining whether any given *k*-sentence is literally significant.

MORRIS LAZEROWITZ.

FINITISM AND "THE LIMITS OF EMPIRICISM".

Mr. Bertrand Russell's criticisms of the finitist position [1] as set out in my papers in Mind on " Finitism in Mathematics " [2] concern in the main two topics : the condition, held there to be a necessary one, for a mathematical verbal form to have meaning, and the interpretation of such descriptive phrases as " the expansion of π ". I wish to consider these criticisms, and to make a few comments on a problem respecting the " generation " of integers which, in Mr. Russell's opinion, faces the finitist.

The first of Mr. Russell's criticisms concerns the criterion given for testing whether a verbal form has meaning. He says (p. 144) : " It seems to follow that, if a form of words p is syntactically correct, we always ' know what is meant by the statement that p is demonstrated ' ". It is unclear whether Mr. Russell intends " syntactical correctness " to mean mere grammatical correctness. If he does, then I wish to hold that the latter is not sufficient to guarantee that " p " has meaning, and further, that proof is not only sufficient but necessary for both the meaning and the truth of a mathematical verbal form.

The latter claim expresses roughly the criterion which was either ambiguously or incorrectly set out in my papers in Mind, and which I now wish to state more precisely. I said, page 189, " The finitist demands that we should be certain of being able to verify or prove false a verbal form before we hold it to be either true or false in any clear sense of these two words ". As Mr. Russell's criticisms indicate, this suggests that one must be psychologically certain of being able to surmount any physical obstacles in the way of carrying out a substantiation or refutation. I did not intend to mean this, but rather : " The finitist demands either that it be logically possible to verify a mathematical verbal form, or that any method by which it is possible that one should verify it shall be such as to guarantee success in advance of use : else one should not hold a given mathematical verbal form to have meaning ". [3]

Some account of the meaning of the phrase " logically possible " appearing in the above demand (and also of the phrase " logically impossible "), is obviously necessary. Also, some explanation is

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[1] In " The Limits of Empiricism ", *Proc. Arist. Soc.*, N.S., Vol. XXXVI., pp. 131-150.

[2] Vol. XLIV., N.S., Nos. 174, 175.

[3] Verification in mathematics will be logical demonstration.

required for the fact that the restated criterion does not read : " The finitist demands either that it be logically possible to verify *or prove false* a mathematical verbal form, or . . . ". That is, it is required to explain why " ' p ' has meaning " is in mathematics said to entail " p is verifiable " rather than " p is either verifiable or provably false ". Let us consider the last point first ; but, instead of the claim that in mathematics " ' p ' has meaning " entails " p is verifiable " rather than " p is either verifiable or provably false ", let us take, to begin with, the claim that in mathematics " ' p ' has meaning " entails " p is true " rather than " p is either true or false ". I think it will be admitted that where a mathematical p is in question, " p is false " is at a minimum equivalent to " p is inconsistent with some set of postulates ", *i.e.* $\sim \diamond (r . s . t$ . . . $p)$, and " p is true " to " p follows from some set of postulates ", *i.e.*, $\sim \diamond \sim (r . s . t$ . . . $\supset . p)$. Now if " p is true " is understood to be equivalent to $\sim \diamond \sim (r . s . t$ . . . $\supset . p)$, which is of course a necessary truth, then no matter whether p is necessary or contingent, " p is true " seems to be equivalent to " ' p ' has meaning ". For " p is true or false ", which might be supposed equivalent to " ' p ' has meaning ", is not a genuine disjunction.[1] That is, one apparent disjunct of $\sim \diamond \sim (r . s . t$ . . . $\supset . p) \mathbf{v} \sim \diamond (r . s . t$ . . . $p)$, being an impossibility, is not a genuine disjunct, and hence " ' p ' has meaning " reduces to " $\sim \diamond \sim (r . s . t$ . . . $\supset . p)$ ". I shall discuss later the reduction of " p is verifiable " to " p is true ", whereupon the foregoing comments will be seen to apply to the claim that " ' p ' has meaning " entails " p is verifiable " rather than " p is verifiable or provably false ".

I wish now to delimit the notion, " logically possible ", first by saying what the claim in which the phrase appears does *not* mean. It is not intended to be a statement about one's capacities to carry out a proof. That is, " It is logically possible for S to prove p " does not mean " S has or may have the capacities to prove p ". (It is not a statement about S.) What I do intend is that the demand should state a requirement of existence, within a mathematical system, of an ordered set of propositions which substantiate the form in question. The existence of a relevant set of this sort is obviously a sufficient condition for a mathematical verbal form to express what is true. I wish to hold in addition that it is a necessary condition. To do this it must be held that " possible proof " *in mathematics* is equivalent to " actual proof ", *i.e.* $\diamond (p . q . r$ . . . $\mathbf{\cdot} \mathbf{\cdot}$. $t) . \equiv . (p . q . r$ . . . $\mathbf{\cdot} \mathbf{\cdot}$. $t)$. The demand that it be logically possible to prove a mathematical form thus comes to the demand that there *be* proof before one holds it to express what is true (*i.e.*, to have meaning).

If it is possible to substantiate this latter claim, it will be by establishing a logical distinction between mathematical and empirical

[1] M. Lazerowitz, " Necessary and Contingent Truths ", *The Philosophical Review*, Vol. 45 (1936), pp. 273-274.

propositions. A set of propositions describing a possible confirmation of an empirical proposition p does not demonstrate that p is true—p's truth-value depends on something other than such a combination of logically relevant propositions. But in the case of mathematical propositions, as Dr. L. Wittgenstein seems to have held,[1] there is no *description* of a proof in advance of proof. In other words, the attempt to describe a proof results simply in the construction of a proof. Let us consider the phrase " possible proof ". This phrase would seem to translate into " description of a proof ". Thus the statement of a possible proof ϕ [2] will be the statement of a description of a proof. Supposing we had such a statement, it would seem to follow from Dr. Wittgenstein, if I rightly understand him, that ϕ was itself the required proof. And it would therefore seem that the word " possible " can be dropped from the phrase " possible proof " without affecting its significance. That is, a possible proof is a proof. Letting Bp designate " possible proof of p " or " provable p ", we have B$p = p$; that is, Bp not only entails p, but is a necessary condition of the truth of p. (Likewise $B \sim p = \sim p$.) That " p is true " means in mathematics that p follows from some set of postulates, or that p is the result of a proof, would be generally admitted. That " result " in mathematics means " consequence of a specifiable proof ", and hence that an expression is not a result unless a proof is specifiable, will not be so readily admitted. I have been saying that a proof is a necessary condition of both the meaning and the truth of a mathematical verbal form.[3] To substantiate this claim it will at least be relevant, if not sufficient, to show that a mathematical verbal form stands in a different relation to its " evidence " from that in which an empirical expression does. Mr. Russell took my claim as stated in the papers (that we should be certain of being able to verify or disprove a verbal form before holding it to be either true or false) to apply generally to both mathematical and empirical expressions. As certain empirical examples he gave show, this claim, which seemingly requires psychological certainty, is incorrect. Actually I wanted to make the claim as amended above, and in connection with mathematical verbal forms only.

[1] Lectures in Cambridge University, 1932-35.

[2] Note that to say there is a possible proof by *reductio ad absurdum*, in a case where no proof or method of proof exists, is to use the word " possible " in the sense referring to one's ignorance—that is, " possible proof by *reductio ad absurdum* " translates " possible . . . so far as one knows ". I am using the phrase " possibility of proof " to refer to a fact about mathematical language, not to facts about a prover. " Possible p " is always open to these two interpretations : " possible so far as one knows ", " existent within language ". It is the latter meaning which I intend ; though precisely what it means is not entirely clear.

[3] Proof of the self-contradictoriness of p, *e.g.*, in number theory, I take it, shows " p " to be meaningless. Thus a meaningful " p " will express either a contingent proposition or a tautology.

I do not believe it has ever been shown that " ' p ' has meaning " is in mathematics equivalent to " p has proof ", (an interpretation of Heyting's finitist calculus [1] asserts only $Bp \to p$). Such a view may in fact not be tenable, but the following considerations respecting " evidence " for a mathematical p seem to argue for its correctness; for they suggest (1) that the relation between the meaning of " p " and the " evidence " for p is an internal one, and (2) that syntactical correctness, though necessary, is not sufficient for " p " to have meaning. (1) I have already noted that where a mathematical p is in question, " ' p ' has meaning " entails " p is true ", *i.e.*, that " p is true " is a necessary condition for the truth of " ' p ' has meaning ". There is obviously not only a one-way entailment between these two, but also an equivalence. On the other hand, where an empirical p is concerned, no such equivalence holds. This is because " truth " and " falsity " are respectively equivalent to the relational property of correspondence to and discordance with something extrinsic to the proposition.[2] Since such is the character of empirical truth and falsity, a confirmation or a negative case, being relevant to truth or falsity, will secure meaning to " p ". Obviously there is no such thing as confirmation of the truth of a mathematical p, for the truth-value of a mathematical p is intrinsic to p (p being either a consequent having necessary truth or an entailment of the form $r \cdot s \cdot t \ldots \lessdot \cdot q$). And since " evidence " for a mathematical p is in fact merely the logical analysis of p (therefore at least equivalent to p), the truth-value of p and the evidence for the truth-value are both intrinsic to p. Thus if logical analysis of any mathematical p exhibits the axioms (or evidence) intrinsic to it, it will not be sensible to talk of " p " having meaning independently of its evidence. To do so would be to say " p " has meaning without having meaning.

(2) For the above reason, it will not be possible to hold that syntactical correctness of a form of words " p " will be sufficient to guarantee that " p " has meaning (where " syntactical correctness " is taken to mean " grammatical correctness "). Even though " p " is syntactically correct, we shall still be unable to know what is meant by " p is demonstrated " (or " p is true ") if evidence for p is lacking. For in the latter case there is no meaning *within the system of mathematics* (no logical analysis) to know, since " ' p ' has meaning " is equivalent to " there is a logical analysis of what ' p ' expresses ".

I shall consider for the remainder of this discussion the descriptive phrase " the expansion of π ", and Mr. Russell's claim that it is only " medically impossible " (not logically impossible) to run through " the expansion of π ". In my papers in MIND I used this

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[1] K. Gödel, " Eine Interpretation des intuitionistischen Aussagenkalkül ", *Ergebnisse eines Math.-Kolloquium*, 1933, Heft 4, p. 39.

[2] See similar idea in L. Wittgenstein's *Tractatus Logico-Philosophicus*, 2.222.

latter phrase, from which it would seem, as Dr. M. Lazerowitz has pointed out to me, that Mr. Russell and I both agree on the important point regarding the existence of an infinite extension and disagree on the relatively trivial point as to which kind of impossibility is involved in the supposition that one runs through π. For the supposition that it is impossible to run through *the expansion* of π entails that there is an *expansion* through which it is medically, or logically, impossible to run. On the view put forward in my papers, this usage is entirely incorrect. The question at issue is, of course, not whether anyone can as a matter of theoretical fact write " all the terms of *the* expansion ", which Mr. Russell supposes to be an infinity of terms, but whether it *makes sense* to talk about there being an infinite number of terms, and *a fortiori* of anyone's writing them. I want to hold that, in the sense of an extension, there is no expansion which is the *infinite* expansion of π, but that there is only a finite number of expansion*s*. The view that π, taken as an extension, is always finite, makes both Mr. Russell and me wrong. For it need not be impossible in any sense to run through a finite number of terms.

Now I think Mr. Russell assumes that there is an *infinite* extension, α, which the phrase describes but which it is medically impossible to write down. Also, I think it probable that he assumes that an omniscient Deity *could* know α by acquaintance, and that finite minds know it only by the description, " the expansion of π ". I take it that he assumes either (*a*) that the Deity envisages α as a whole, or (*b*) that the Deity does what he conceives a man as doing —a man whose skill " increases so fast that he performs each operation in half the time required for its predecessor ",[1] in which case " the whole infinite series would take only twice as long to write down as the first operation ".[1]

Let us consider, with regard to supposition (*a*), that there can *exist* an infinite sequence. If I simply assert it to be false that such a sequence exists, then anyone whatever can " run through " *all* its terms,[2] for clearly it is possible to run through all the terms of a null class. Thus anyone whatever can run through all the terms of π, taken as an infinite extension, if there is no infinite extension. The Deity then, or anyone else, would do so in a trivial sense. What I intend to say is that there is no extensional *interpretation*, therefore no meaning in this sense, of the phrase " *the* expansion of π ", and obviously, that neither finite minds nor the Deity can do what is nonsensical.

In my papers in MIND, I called the phrase, " to run through the expansion of π ", self-contradictory. It is doubtful whether self-contradictoriness can be shown, but I think that it is nevertheless nonsense. It is the sort of nonsense which results from confusing the function of certain phrases within mathematical language : " The

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[1] " The Limits of Empiricism ", p. 144.   [2] Dr. M. Lazerowitz.

expansion of π " does not describe an infinite extension, not because " there is an infinite extension " is false, but because the phrase expresses a *law*, *e.g.*, the law for expanding the function 4 (arctan $\frac{1}{2}$ + arctan $\frac{1}{3}$). " The expansion of π " is not a short-hand, as " the numbers between 1 and 50 " is for " 1, 2, 3, . . . ". And if it is a description, it is one in a different sense than is " the prime between 6 and 10 ". The phrase in question expresses a mathematical law rather than describes an extension, and " law " and " extension " are words having utterly different senses. *E.g.*, one can give the law denoted by this phrase without writing a single term of any expansion. If this is the case, then to say that the expansion of π is longer than 3 . 14 is to say something very different from saying 3 . 141 is longer than 3 . 14.[1] It is longer because there is no end, not to an extension, but to the possibility of developing a function. That is, given any expansion ϕ of π, a longer expansion ϕ_1 can always be constructed by means of π (understood as a law of continuous construction), such that ϕ_1 will be longer than ϕ. The words " longer than " in the phrase " the expansion of π is longer than ϕ " thus are not used in their usual sense. " π is longer than ϕ " means that a function, say 4 (arctan $\frac{1}{2}$ + arctan $\frac{1}{3}$), can be developed to 20 terms, to 50 terms, *and so on* indefinitely. " And so on " distinguishes the terminating from the non-terminating decimal, and it is not a shorthand here for an extension one does not wish to trouble to write, nor for " and so on through an infinite extension ", nor for " and so on as long as one has strength ". It is part of a law about how signs may be written, no matter what one's physical condition is.

Thus when I said that it was logically impossible to run through the expansion of π, I should have meant that it did not make sense to say this : It does not make sense to say one *runs through a law*. That it fails to make sense is not because one has constructed a self-contradictory combination of symbols, but because one has confused the function of a descriptive phrase, the confusion arising through the linguistic similarity of this phrase to descriptive phrases in the ordinary sense. If these comments are correct, then the supposition (*b*) that a man's skill might increase in such a way that if the first operation of expanding took a half-minute, " the whole infinite series would take only twice as long . . . ",[2] would also be nonsense. Since my general claim as to the impossibility of an extensional interpretation of " the expansion of π " may be incorrect, I wish to make some further comments about this particular supposition. Mr. Russell looks upon the time sequence $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$ . . . in precisely the same way as upon the sequence 3, 3 . 1, 3 . 14, . . ., namely as an " infinite extension ". As Dr. M. Lazerowitz has pointed out to me, the possibility of " running through the expansion of π " cannot be shown by assuming, as Mr. Russell does, that a man goes

[1] Dr. L. Wittgenstein, Lectures in Cambridge University, 1932-35.
[2] " The Limits of Empiricism ", p. 144.

through an *infinite* sequence of time intervals in the course of completing an infinite number of operations. That is, the possibility of an infinite sequence cannot be demonstrated by assuming the existence of an infinite sequence. For the finitist must hold, whether rightly or wrongly, that of " the sequence of time intervals " also, it cannot meaningfully be supposed that it denotes an infinite extension.

In conclusion I want to say something about Mr. Russell's claim that on a finitist view one has no right to say there is no greatest finite integer. If Wittgenstein's symbol $(0, \xi, \xi + 1)$ means, as Mr. Russell supposes,[1] " Start with 0, and if you reach ξ go on to $\xi + 1$, as long as humanly possible ", that is, if it means something about persons and their capacities rather than an analytic fact about numbers, then there would be a maximum finite integer. Thus, in one sense of the phrase " the greatest finite integer ", namely the sense in which it is equivalent to " the greatest constructed, or symbolized, integer ", I have no intention of disagreeing with Mr. Russell in holding that there would be a greatest integer. And, so interpreted, the claim that there is such an integer is not inconsistent with the rule $(0, \xi, \xi + 1)$: " For any finite integer ξ, another integer $\xi + 1$ can be constructed ". However, this sense of " the greatest finite integer " is mathematically trivial, and is not the sense one would suppose finitists actually intend, although it is only in this sense that one could suppose they were holding something false in holding there is no greatest integer. By " the greatest integer " one would suppose they intend " the greatest *constructable* integer ", and by the Wittgenstein rule a statement about what signs can be written by means of the rule and not a statement which can be falsified by any inadequacy in human capacities. With this, non-trivial, interpretation of " the greatest integer ", it will not be possible to hold that there is a greatest integer together with the Wittgenstein rule; for the Wittgenstein rule entails that there is no greatest (constructable) integer. Thus " there is a greatest integer " has a trivial interpretation consistent with the rule, and a non-trivial interpretation inconsistent with it. If, as I should suppose, finitists mean by " greatest integer ", " greatest constructable integer ", then they can know in advance that there is no greatest integer, *i.e.*, they are justified in including in finitist mathematics laws for construction indefinitely. Furthermore, the phrase " infinite *class* of integers ", will be unobjectionable if one means by it some such law for *constructing* integers as $(0, \xi, \xi + 1)$.

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[1] " The Limits of Empiricism ", p. 143.

A MISTAKE OF PLATO'S IN THE *REPUBLIC*.

THE first eleven pages of the second Book of the *Republic* are important because they contain, after the admittedly inadequate argument of Bk. I., an elaborate restatement in the speeches of Glaucon and Adimantus of the ethical theory which the whole *Republic* is intended to refute. Thus Glaucon, for example, expresses his intention of renewing Thrasymachus' argument, on the ground that the latter has succumbed before he ought.[1]

I have not observed that any commentator has noticed that the book opens with a false statement of the point at issue.[2] Glaucon begins by distinguishing ' good things ' into three classes. There is (i) the good which " we should like to possess not through a desire of its consequences, but for its own sake,[3] such as enjoyment, and pleasures which are harmless and which have no subsequent results other than enjoyment " ; (ii) " that which we love both for its own sake and for the sake of its consequences,[4] such as wisdom and sight and health " ; (iii) goods of which " we should say that they are troublesome, but that they benefit us, and we should not wish to have them for their own sakes, but for the sake of the rewards and other things which result from them ".[5] Examples of this third class are " gymnastic exercise, submission to medical treatment, the practice of medicine or of any other money-making pursuit ". It is then required of Socrates that he shall prove that justice belongs to the second of these classes, against his opponents, who would place it in the third.

The question proposed in this passage is in fact never argued in the *Republic ;* nor is it the question which Glaucon and Adimantus intend to propose for argument.

(i) It is not the question argued in the *Republic.* It supposes Socrates to defend the position that justice is something which " we should be content to have " even though it produced no good consequences, and it supposes Socrates' opponents to admit that justice is good in the sense of producing consequences beneficial to the agent. But neither of these suppositions is correct. Socrates' defence of justice, which culminates in the ninth book, consists in

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[1] 358*b*.   [2] The statement is contained in the passage 357*a*1-358*a*9.

[3] ὃ δεξαίμεθ' ἂν ἔχειν οὐ τῶν ἀποβαινόντων ἐφιέμενοι, ἀλλ' αὐτὸ αὑτοῦ ἕνεκα ἀσπαζόμενοι.

[4] ὃ αὐτό τε αὑτοῦ χάριν ἀγαπῶμεν καὶ τῶν ἀπ' αὐτοῦ γιγνομένων.

[5] ταῦτα ἐπίπονα φαῖμεν ἄν, ὠφελεῖν δὲ ἡμᾶς, καὶ αὐτὰ μὲν ἑαυτῶν ἕνεκα οὐκ ἂν δεξαίμεθ' ἔχειν, τῶν δὲ μισθῶν τε χάριν καὶ τῶν ἄλλων ὅσα γίγνεται ἀπ' αὐτῶν.

the demonstration that happiness is the natural consequence of justice ; he nowhere argues that justice would be a good, if it were not attended by this consequence.   Nor is it the contention of any of Socrates' opponents, neither of Thrasymachus nor of those whose views are represented by Glaucon and Adimantus, that justice is a good by reason of its beneficial consequences to the agent.   Their contention, on the contrary, is that justice is not a good at all. According to Thrasymachus, justice is not something which " we should be content to have " ($\delta\epsilon\xi\alpha\acute{\iota}\mu\epsilon\theta$' $\mathring{\alpha}\nu$ $\mathring{\epsilon}\chi\epsilon\iota\nu$) for any reason whatever ; it is an evil which we are forced to endure if we are not strong enough to avoid it.   According to the views represented by Glaucon and Adimantus, the beneficial consequences usually ascribed to justice are in reality consequences, not of justice, but of seeming to be just.   It would follow that the reputation of justice belongs to the third division of good things, but that justice itself belongs to none of the three.   The examples which Glaucon quotes of his third class of goods make it amply clear that none of Socrates' opponents could have ranked justice among them.   Thrasymachus would not have maintained of gymnastic exercise that it is something which no man would undergo unless compelled by superior force ; nor would Adimantus have argued that the benefits commonly attributed to medical treatment can be equally well attained by pretending to submit to the treatment.

The issue which is really argued in the *Republic* is a different one. It is, namely, whether happiness is a natural consequence of justice, and unhappiness of injustice, as Socrates maintains ; or whether their natural consequences are precisely the reverse of these.   If the former is true, a knowledge of the nature of justice, and of its consequences, will be sufficient to induce a man to be just ; if not, men can be induced to act justly only by the arbitrary or conventional annexation of such rewards ($\mu\iota\sigma\theta o\acute{\iota}$) to just, and of such penalties to unjust, actions as will outweigh the opposite influence of the natural consequences of either.   A further corollary follows : the natural consequences of justice can be obtained only by being just, but rewards and penalties attached to justice by the will of a superior or the convention of a society, since they have no necessary connection with justice, can always be obtained by one who is not just, provided that he can counterfeit the appearance of justice. They are thus, strictly speaking, consequences not of justice, but of the reputation or " seeming " ($\delta\acute{o}\xi\alpha$) of justice.

The issue thus turns largely upon the distinction between a natural consequence and a $\mu\iota\sigma\theta\acute{o}s$.   If a schoolboy labours at his studies, the enlightenment of his understanding is not a $\mu\iota\sigma\theta\acute{o}s$ of his labour, but its natural consequence.   The $\mu\iota\sigma\theta\acute{o}s$ is the prize which he receives at the end of the term.   Like all $\mu\iota\sigma\theta o\acute{\iota}$ this will be obtainable by one who has not laboured, if he can counterfeit the appearance of having done so ; but only actual submission to the labour will procure him the intellectual enlightenment.   If we

translate the dispute between Socrates and his opponents into terms of this analogy, we may say that Socrates is in the position of one who should maintain that the labour of study is made worth while by the enlightenment which is its natural consequence, whether or not it is rewarded by a prize, while the view of his opponents corresponds to that of a man who should hold that study produces naturally none but deleterious consequences (exhaustion and headaches, say), so that the sole inducement which can recommend the pursuit of it is expectation of the prize.[1]

(ii) Nor is the question proposed in 357 that which Glaucon and Adimantus intend to propose to Socrates. Socrates' entire argument in favour of justice is based on an appeal to its consequences, and he certainly does not think that in arguing thus he is departing from the prescription laid upon him by Glaucon and Adimantus. He thinks himself bound by the terms of his brief to abstain not from appealing to the consequences of justice, but only from appealing to the benefits attached to it by will or convention (its μισθοί), or (what is the same thing) to the benefits resulting from a reputation of justice (its δόξαι). Thus in X. 612a-d, after all the proofs of Book IX. that justice is productive of happiness, he can claim :

" We have kept our contract throughout the argument. We have not introduced the rewards (μισθούς) of justice, nor the benefits attached to the reputation of it (οὐδὲ τὰς δόξας), as you said that Hesiod and Homer did, but we have found that justice itself is the best thing for the soul itself, and that it ought to practise justice whether it has the ring of Gyges or not. . . . May we not then now without prejudice restore to justice and to the rest of virtue the rewards (μισθούς) in addition, . . . which it affords the soul at the hands both of men and of gods ? "

Socrates demands now the return of the concession which he made at the beginning :

" I granted to you that the just man should have the reputation of injustice and the unjust man of justice. For you demanded that, even if it were not possible that these things should escape the notice of gods and men, nevertheless it should be granted for the sake of the argument, in order that justice itself might be judged against injustice itself.[2] . . . Now, therefore that they have been judged, I demand back on behalf of justice that we too should agree to grant her that reputation which she actually enjoys with gods and men, in order that she may also receive the prizes, obtaining the credit for those results of seeming just which she confers upon those who possess her, since it has already appeared that she confers the benefits which result from being just." [3]

[1] Or, alternatively, of course, apprehension of a penalty annexed to idleness. For simplicity's sake I have not made express mention throughout of this alternative, but it can be tacitly supplied.

[2] ἵνα αὐτὴ δικαιοσύνη πρὸς ἀδικίαν αὐτὴν κριθείη.

[3] ἵνα καὶ τὰ νικητήρια κομίσηται, ἃ ἀπὸ τοῦ δοκεῖν κτωμένη δίδωσι τοῖς ἔχουσιν αὐτήν, ἐπειδὴ καὶ τὰ ἀπὸ τοῦ εἶναι ἀγαθὰ διδοῦσα ἐφάνη.

Socrates expresses in III. 392c the same conception of the task which he has undertaken. He is to discover "what sort of thing justice is, and that it is profitable by its nature to the man who possesses it, whether he has the reputation of being just or not ".[1]

Glaucon "and the rest," when they reiterate their demand upon Socrates in II. 368c, do so in words which show that he has not misunderstood their intentions. They beseech him "to investigate to the end what each of these two is [sc. justice and injustice] and which of the two views is the truth concerning the benefit which they confer ".

Finally, if we examine the actual speeches in which Glaucon and Adimantus introduce their problem at the beginning of Bk. II., it will appear that their language in most passages presents the problem in these terms and not in terms appropriate to Glaucon's original presentation of it. Thus already in 358b Glaucon says ἐπιθυμῶ ἀκοῦσαι τί τ' ἔστιν ἑκάτερον καὶ τίνα ἔχει δύναμιν αὐτὸ καθ' αὑτὸ ἐνὸν ἐν τῇ ψυχῇ, τοὺς δὲ μισθοὺς καὶ τὰ γιγνόμενα ἀπ' αὐτῶν ἐᾶσαι χαίρειν : i.e., he wishes to hear the consequences which naturally proceed from being just, not those which may be obtained by seeming to be so. When he says of justice in 358d βούλομαι αὐτὸ καθ' αὑτὸ ἐγκωμιαζόμενον ἀκοῦσαι, we ought to interpret αὐτὸ καθ' αὑτὸ in the light of the former passage to mean "for its own consequences, and apart from those procured by its reputation", not "for itself apart from its consequences". Similarly Adimantus in 366e demands to be shown concerning justice and injustice αὐτὸ ἑκάτερον τῇ αὑτοῦ δυνάμει τί δρᾷ, τῇ τοῦ ἔχοντος ψυχῇ ἐνόν, and excludes an argument which praises δόξας τε καὶ τιμὰς καὶ δωρεὰς τὰς ἀπ' αὐτῶν γιγνομένας. In 367b he requests to be shown τί ποιοῦσα ἑκατέρα τὸν ἔχοντα αὐτὴ δι' αὑτὴν ἡ μὲν κακὸν, ἡ δὲ ἀγαθόν ἐστιν· τὰς δὲ δόξας ἀφαίρει, ὥσπερ Γλαύκων διεκελεύσατο. Nothing, finally, could be clearer than his request in 367d : τοῦτ' οὖν αὐτὸ ἐπαίνεσον δικαιοσύνης, ὃ αὐτὴ δι' αὑτὴν τὸν ἔχοντα ὀνίνησιν καὶ ἀδικία βλάπτει, μισθοὺς δὲ καὶ δόξας πάρες ἄλλοις ἐπαινεῖν.

Apart from the evidence of particular passages, it is clear that the speeches of Glaucon in 360e1-362b8 and of Adimantus in 362e1-367e5 lose all their point if the attempt is made to bring them into relation with the issue proposed by Glaucon in 358. Thus Glaucon in his later speech challenges Socrates in effect as follows : "suppose two men, one just and the other injust, and suppose in addition that the just man is unfortunate enough to incur the reputation of injustice and the unjust man cunning enough to gain the reputation of justice, and then show that the lot of the former is preferable to that of the latter." This stipulation would be irrelevant if the question were whether justice is good in itself or (like gymnastic) good for its consequences only ; but it is obviously pertinent to the question whether justice is rendered worth while by its own

[1] οἷόν ἐστι δικαιοσύνη καὶ ὡς φύσει λυσιτελοῦν τῷ ἔχοντι, ἐάν τε δοκῇ ἐάν τε μὴ τοιοῦτος εἶναι.

consequences, or whether it is only recommended (to the muddle-headed) by rewards which are actually attainable by seeming just without being so. Adimantus warns Socrates to shun the error commonly committed by poets and parents in their exhortations to virtue. What was this error ? Certainly not that they recommended justice by its consequences (Adimantus was not so austere as to have cavilled at that), but that they recommended it by consequences which are not consequences of justice at all, but of seeming just. Their fault is not that they recommend justice from the wrong motive, but that they do not really recommend justice at all, but roguery and efficient hypocrisy.

The original demand which Glaucon made of Socrates in terms of his threefold division of goods was that he should prove justice to be good in itself and apart from its consequences, against opponents who maintained it to be bad in itself but good by reason of its consequences. It has now appeared that Socrates nowhere maintains that thesis, nor his opponents that antithesis ; that both Socrates himself, and his interlocutors subsequently, assume that a different problem from this has been proposed ; and that the speeches of Glaucon and Adimantus, if we ignore Glaucon's opening passage and a few subsequent references to the threefold division of goods, really do propose a different problem. Only one conclusion is possible. It is necessary to recognize that the threefold division of goods is irrelevant to the issue, and that Plato made a mistake in inserting the passage of Glaucon's speech in which it is contained. A true interpretation of Plato's meaning in the *Republic* requires us to dismiss what he says in that passage.

It seems quite clear that Plato simply confused the two issues. Thus in 367c-d, he describes the goods of his third class by saying αὐτὰ μὲν ἑαυτῶν ἕνεκα οὐκ ἂν δεξαίμεθα ἔχειν, τῶν δὲ μισθῶν τε χάριν καὶ τῶν ἄλλων ὅσα γίγνεται ἀπ' αὐτῶν. The mention of μισθοί is out of place here, for it is not true that such goods as gymnastic exercise and medical treatment are desirable only for their μισθοί. Its insertion can be explained only upon the assumption that Plato is confusedly identifying this contrast with the subsequent one. But the clearest example of the confusion is to be found in 367c-d, which I will quote in full : ἐπειδὴ οὖν ὡμολόγησας τῶν μεγίστων ἀγαθῶν εἶναι δικαιοσύνην, ἃ τῶν τε ἀποβαινόντων ἀπ' αὐτῶν ἕνεκα ἄξια κεκτῆσθαι, πολὺ δὲ μᾶλλον αὐτὰ αὑτῶν, οἷον ὁρᾶν, ἀκούειν, φρονεῖν καὶ ὑγιαίνειν δή, καὶ ὅσ' ἄλλα ἀγαθὰ γόνιμα τῇ αὑτῶν φύσει ἀλλ' οὐ δόξῃ ἐστίν, τοῦτ' οὖν αὐτὸ ἐπαίνεσον δικαιοσύνης, ὃ αὐτὴ δι' αὑτὴν τὸν ἔχοντα ὀνίνησιν καὶ ἀδικία βλάπτει, μισθοὺς δὲ καὶ δόξας πάρες ἄλλοις ἐπαινεῖν. The earlier portion of this sentence implies that the issue is whether justice is to be praised for itself or for its consequences ; the latter portion that the issue is whether it is to be praised for its natural consequences or for its μισθοί τε καὶ δόξαι.

It has seemed worth while to insist at length upon this point, because failure to notice it has led some commentators into error.

(1) Grote [1] describes the point at issue between Socrates and his opponents by reference to Glaucon's classification of goods in *Rep.* 357. Plato, he says,

"insists that justice is eligible and pleasing *per se*, self-recommending : that among the three varieties of *Bona*, . . . it belongs to the last [2] variety : whereas the opponents whom he impugned referred it to the second.[2] Here the point at issue between the two sides is expressly set forth. Both admit that justice is a Bonum—both of them looking at the case with reference to the agent himself. But the opponents contend that it is a Bonum (with reference to the agent) only through its secondary effects, and no way Bonum or attractive in its primary working : being thus analogous to medical treatment or gymnastic discipline, which men submit to only for the sake of ulterior benefits. On the contrary, Plato maintained that it is good both in its primary and secondary effects : good by reason of the ulterior benefits which it confers, but still better and more attractive in its direct and primary effect : thus combining the pleasurable and the useful, like a healthy constitution and perfect senses. Both parties agree in recognizing justice as a good : but they differ in respect of the grounds on which, and the mode in which, it is good.

"Such is the issue as here announced by Plato himself : and the announcement deserves particular notice because the Platonic Sokrates afterwards, in the course of his argument, widens and misrepresents the issue : ascribing to his opponents the invidious post of enemies who defamed justice and recommended injustice, while he himself undertakes to counterwork the advocates of injustice, and to preserve justice from unfair calumny [3]—thus professing to be counsel for Justice *versus* Injustice. Now this is not a fair statement of the argument against which Sokrates is contending. In that argument justice was admitted to be a Good, but was declared to be a Good of that sort which is laborious and irksome to the agent in the primary proceedings required from him —though highly beneficial and indispensable to him by reason of its ulterior results : like medicine, gymnastic discipline, industry,[4] etc. Whether this doctrine be correct or not, those who hold it cannot be fairly described as advocates of injustice and enemies of Justice : any more than they are enemies of medicine, gymnastic discipline, industry, etc., which they recommend as good and indispensable, on the same grounds as they recommend justice."

This criticism is entirely just on the assumption that *Rep.* 357 contains a true statement of the issue in dispute between Socrates and his opponents. It is not possible both to defend Plato for having written 357 and to vindicate him against Grote's charges that he misrepresents the issue elsewhere. The truth is that, while there is a misrepresentation of the issue, it occurs in 357. To portray

[1] *Plato and the other Companions of Socrates*, Vol. III., ch. xxxiv., pp. 143-144.

[2] Grote, in describing the three classes of goods, reverses the order of the second and third.

[3] *Rep.* II., 368b. δέδοικα γὰρ μὴ οὐδ' ὅσιον ᾖ παραγενόμενον δικαιοσύνῃ κακηγορουμένῃ ἀπαγορεύειν καὶ μὴ βοηθεῖν, ἔτι ἐμπνέοντα καὶ δυνάμενον φθέγγεσθαι.

[4] *Rep.* II., 357-358.

Socrates as the champion of justice and to ascribe to his opponents
" the invidious post of enemies who defamed justice and recommended
injustice ", is a true representation of the actual dispute.

(2) Bosanquet [1] comments on 367d [2] as follows : " ' Select for
commendation this particular feature of justice, I mean the benefit
which in itself it confers on its possessor '. ' The rewards and
reputations leave to others '. Note the extreme difficulty (techni-
cally an impossibility) of stating the nature of morality in answer
to a question in the form ' Why should I be moral ? ' Its ' rewards '
are not to be stated, but yet its ' benefits ' are."

If I have understood Bosanquet rightly, he is making a difficulty
where none exists, through failure to see that the μισθοί of an
action do not include all its beneficial consequences, but only such
as are attached to it arbitrarily or by convention. There is no
paradox in the request that Socrates shall praise the benefit which
justice in itself (δι' αὐτὴν) confers on its possessor, but shall omit
its rewards.

(3) The last point I wish to make is a small one, but perhaps not
without interest. It concerns the translation of the word γόνιμα
in Rep. II., 367d. [3] With one exception, every translator or commen-
tator known to me renders " real " or " genuine ". Thus Adam
comments : " i.q. γνήσια, but more forcible, e.g., Theaet. 151e, Ar.
Frogs, 96 ". Jowett and Campbell say : " ' genuine ', ' real '," and
they also compare Ar. Frogs, 96. Jowett translates : " any other
real and natural and not merely conventional good ". Davies
and Vaughan : " everything else which is genuinely good in its own
nature ". A. D. Lindsay : " all other goods which are genuine
and real, good in their own nature, not for the reputation they bring ".
The new Liddell and Scott (Oxford 1925) cites Manetho 6.56 for
γόνιμος in the sense of " born in lawful wedlock ", and refers to this
passage of the Republic as a metaphorical usage under the same head.

The exception is P. Shorey in the Loeb translation. He renders :
" all other goods that are productive in their own nature and not
by opinion ", and adds the comment : " Adam's note on γόνιμα, i.q.,
γνήσια, is, I think, wrong ".

I do not think that an unprejudiced inspection of the context can
lead to any other conclusion than that Shorey is right and that all
the rest are wrong. γόνιμα must bear here its ordinary meaning
of " fertile " or " productive ". The sense of the passage will then
be that Socrates is to prove the claim of justice to be ranked among
those goods which are " productive [sc. of benefit] by their own
nature and not by reputation (γόνιμα τῇ αὑτῶν φύσει ἀλλ' οὐ δόξῃ) ".
As though to put this interpretation beyond possible doubt, Plato
expands the sentiment as follows in the lines immediately succeed-
ing : " praise justice for the benefit which it confers by its own nature

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[1] A Companion to Plato's Republic, p. 78 (on Rep. II., 367d).
[2] The whole passage is quoted above, p. 390.
[3] See the whole passage, quoted above, p. 390, of the present article.

upon the man who possesses it (and similarly with the harm inflicted by injustice), and leave others to praise rewards, which can be attained by seeming to possess it ". (μισθοὺς δὲ καὶ δόξας πάρες ἄλλοις ἐπαινεῖν.)

Some potent reason must have operated to induce so large a number of interpreters to shun the translation " fertile " or " productive " for γόνιμα in this passage. The reason cannot be linguistic. In order to show this, it is not necessary that I should enter the lists against these scholars in a field in which I am not at home. I cannot, indeed, refrain from pointing out that the two passages which Adam cites are so far from supporting his interpretation, that they both imperatively demand the translation " fertile ". But to do so is really irrelevant, for I do not wish to impugn the conclusion which the linguistic evidence is adduced to support : namely that it is possible for γόνιμος to bear a sense equivalent to γνήσιος. No amount of such evidence could prove that it is necessary to interpret γόνιμα in that sense in this passage, but only that it is possible, if there are other reasons for doing so.

I suggest that it is not hard to see what these other reasons are which have influenced the translators. Adimantus begins the passage in question by an explicit reference to Glaucon's unfortunate classification of goods : " You have admitted that justice belongs to the class of the greatest goods, which are worth possessing both for the sake of the consequences which proceed from them, but much more for their own sakes, such as sight, hearing, wisdom and health ". It seems inconsistent to continue " and such other good things as are *productive* (sc. of beneficial consequences) ". Consistency seems to require the sense " and such other things as are worth possessing for their own sakes, apart from their consequences ". Hence it is sought to escape the inconsistency by giving such an interpretation to γόνιμα as will avoid its reference to consequences. But the inconsistency must be faced. Even if it is suppressed in this clause, it breaks out irrepressibly in the next : " praise justice for the benefits which it confers by its own nature upon the man who possesses it ". All reason for shunning the natural translation of γόνιμα in this passage disappears when it is realized that in order to reduce the *Republic* to consistency with the passage in II. 357 it would be necessary not merely to modify the sense of a single word, but to rewrite the entire work.

M. B. FOSTER.

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VI.—CRITICAL NOTICES.

Collected Papers of Charles Sanders Peirce. Edited by CHARLES
HARTSHORNE and PAUL WEISS. Volume VI. *Scientific Meta-*
physics. Cambridge (Mass.), Harvard University Press ; and
London, H. Milford, 1936. Pp. x + 462. $5.00, 21s.

THE latest volume of Peirce's papers deals mainly with Ontology,
Cosmology and Religion. Here then is the heart of that " vast
philosophical system of which he left only some fragmentary out-
lines "—concerning which the remarks of Dewey, James, Royce and
Prof. Cohen have raised our great expectations. By this volume
that system is chiefly to be judged : it is, say the publishers, " the
metaphysical culmination ", and after it comes the dénouement—
purely scientific papers, a memoir, and the letters. These last should
be of very great interest : many are published in Chapters xxxii,
lxxv and lxxvi of Prof. R. B. Perry's " Thought and Character of
William James " and provide admirable comments upon the Thought
and Character of both the co-founders of Pragmatism : some use
will be made of these in what follows.

Contents : Book i sets forth the doctrines of *Tychism, Synechism*
and *Agapism :* that is to say, it attempts to explain the universe
by the use of Pure Chance, Continuity, and psychological categories.
Book ii consists of random, more personal, papers on God and social
morality, the problem of evil, immortality and miracles. Scattered
amongst these, however, are writings of a more analytical sort—
his account of the psychology of purposeful conduct (468-477 [1]) and
two versions (478-485, 485-491) of an account of Pragmatism.
Many of these papers (Chapters 3, 7, 8, 10, 12 paras. 1-8, of Book i.;
Chapters 4, 5, 7, of Book ii) are here published for the first time :
others are reprinted from such sources as *The Monist*, the *Popular*
Science Monthly, the *Hibbert*, the *Open Court, Baldwin's Dictionary,*
the *Century Dictionary.* Six of the most important chapters, how-
ever, have already become familiar in *Chance, Love, and Logic,*
(Kegan Paul, 1920), in which they occurred as Part ii and Chapter
5, Part i. The papers vary very much in date and style : *in general*
they might be described as written in a racy and aggressive manner—
that is, in the manner vividly suggested by the photograph which
occurs as a frontispiece.

Three Categories.—The questions which here exercised the Philo-

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[1] Unless otherwise stated, numbers refer to *Paragraphs* of Vol. vi.

sophical Surveyor, he hoped to solve by observation.   Peirce thought that his observations showed three sorts of elements in all phenomena ; so that he has three categories which can be identified in every serious science.   " First is the conception of being or existing independent of anything else.   Second is the conception of being relative to, the conception of reaction with, something else.   Third is the conception of mediation, whereby a first and second are brought into relation . . .   Chance is First, Law is Second, the tendency to take habits is Third " (32).   *Perhaps* Tychism corresponds to First, Agapism to Second, and Synechism to Third.   These doctrines were applied to metaphysics, psychology and biology :   these different illustrations may be regarded as different " deductions of the categories ".

Tychism.—Chance " as an objective phenomenon " is defined as the *fortuitous distribution* of elements or characters—that is, their independence when ordered by a generating relation (74-76). Peirce puts forward the hypothesis that characters in the universe show a tendency towards fortuitous distribution as well as towards regularity.   The hypothesis *needs* no explanation :   for it is regularity that calls for explanation and not irregularity.   But his hypothesis *provides* an explanation :   (i) it explains " experimental errors " (44).   These suggest chance, and no experiment can refute the suggestion.   (ii) It explains diversity—the " initial configuration " which is a determinant in every mechanical action.   The mechanist supposes " all the arbitrary specifications of the universe were introduced in one dose, in the beginning, if there was a beginning . . .   But I, for my part, think that the diversification, the specification, has been continually taking place " (57).   (iii) It explains Novelty :   Time is discontinuous in the present moment and here—by sheer spontaneity—novelty is possible.   Infinitesimal departures from law are always occurring—great ones, infrequently (59, 86).   (iv) It explains uniformity, habit, law.   Any given law is due to a general tendency towards uniformity, but this tendency is a chance development :   " underlying all other laws is the only tendency which can grow by its own virtue, the tendency of all things to take habits " (101*g*).   (v) Chance explains non-conservative processes (*e.g.*, organic growth)—it provides the only explanation of their irreversibility (71-72).   (vi) It explains mind and consciousness.   These are treated as epiphenomena by mechanistic philosophy :   " It enters consciousness under the head of sundries, as a forgotten trifle ;   its scheme of the universe would be more satisfactory if this little fact could be dropped out of sight " (61). The law of mind—of truth and error—requires *Chance*.   In general, chance explains " Variety, Uniformity, and the passage of Variety into Uniformity " (97).   In 101*g* we have a good short summary of the thesis.

Synechism.—There follows a psychological deduction :   the exposition of mind, chiefly by the use of the mathematical concept

of continuity. This is defined (120-126) by reference to Cantor's concatenation and perfection, and re-defined (174 ff.) by the introduction of the principle that " whatever is continuous has *material parts* " (*i.e.*, a multiple set of homogeneous parts). There are special applications of the doctrine to Space and Time (82-87, 210-213). The application to Mind is as follows : (i) Feelings have temporal spread : " we are immediately conscious through an infinitesimal interval of time " (110 : see also volume i, Book iii). (ii) Feelings have intensive continuity—this is presupposed by the continuity of change (132). (iii) They have spatial extension : an agitation (liquefaction) spreads from one point in a protoplasm continuously through the environment : " Whatever there is in the whole phenomenon to make us think there is feeling in such a mass of protoplasm . . . goes logically to show that that feeling has a subjective, or substantial, spatial extension, as the excited state has " (133). (iv) Feelings affect each other : that is, many agitations in one protoplasm combine their effects, much as many waves of sound do : and a general idea is nothing other than such a combination of feelings (137, 142). (v) The manner of such combinations is not absolutely uniform : there is a certain arbitrariness in them (154). (vi) The unity of a personality is nothing other than a very special unity of feelings—that is, a spatial sort of general idea (270-271). (vii) One mind communicates feeling to another through various media—these include animate objects (hands, lips, lungs) and inanimate objects (books, the air). Peirce holds that the susceptibility to ideas of both animate and inanimate objects supports the important conclusion that both are in some degree mental— that we have a world of pure feeling (158). This fits in with the principle that *spontaneity, creativity*, is to be found everywhere in the universe, and with the principle of *continuity*.

Realism, Idealism, Evolution.—These psychological arguments support Scholastic Realism : " general ideas are not mere words . . . but they are just as much, or rather far more, living realities than the feelings themselves out of which they are concreted " (152 : see also the letter to James in Perry, *op. cit.*, ii, 424). There is nothing unreal about the agitation of a protoplasm : why then doubt the reality of a pattern of such agitations ? Objective Idealism also follows : " we ought to suppose a continuity between the characters of mind and matter, so that matter would be nothing but mind that had such indurated habits as to cause it to act with a peculiarly high degree of mechanical regularity " (277). And the whole universe is liable to change—laws as well as particulars; the whole Platonic world is " evolutionary in its origin ".

Agapism.—Peirce has shown that reality is social and that change takes place by effort, the " Eros—exuberance love " of minds, communicating general ideas in a mental continuum. So that Agapism is what " Synechism calls for ". He examines three rival theories of evolution and supports a Lamarckian view that change

comes about mainly by effort leading to new habit. Mere Tychism (chance variation) and mere Anancasm (necessary variation) are " degenerate cases " of Agapism.

Practical Beliefs about the Universe.—These are distinguished from scientific beliefs (216) : I gather that Peirce regarded as a reasonable religious belief, one which (*a*) is not adequately supported by systematic, deliberately collected evidence ; (*b*) is not incompatible with beliefs so established ; (*c*) is *corrigible* by reference to beliefs so established ; (*d*) is an answer to a question which *must* be answered if unavoidable action is to be taken ; (*e*) is actually *founded upon* an enormous mass of evidence never consciously observed or analysed. Peirce described himself as " an individual whose unbiased study of scientific logic has led him to conclusions not discordant with traditional dogmas " (446). What are the relevant conclusions ? In all nature, Chance (eros) has led to *some* degree of order (401). The unity of the whole may be described as the Mind of God (199). This is a figure of speech to the scientist, but of pragmatic value to the man of action. Every man, in his " musement," may frame this hypothesis and will find support for it in his pure feeling. (It is anthropomorphic, but after all the universe is mental, and a human mind is a fairly highly developed one : why regard the universe as inferior ? Why study, as Whitehead says, *only* the minds of savages and morons ?) But we are *not* justified in ascribing to the universe any particular moral character (422). Reality is social, but the *eros* is not directly opposed to hatred—rather it requires hatred and evil as a necessary object. (" Evil—*i.e.*, what it is man's duty to fight, being one of the major perfections of the universe ", 479.) To any narrower religion, the spirit of science is hostile (426).

Character of Religion.—It follows that religion is *moral* and *social.* " Religion is a life, and can be identified with a belief only provided that belief be a living belief " (439). The basis of religion is in the society, the Church. For here men may find " a life broader than their narrow personalities, a life rooted in the very being of truth " (451)—that is, the truths of synechism and agapism. The church is the continuum of minds, raised to higher levels of richness, meaning, harmony and contrast. In the church, in society, we have our immortality—our perpetual *influence.* Peirce is sceptical about any other form of survival.

What do the Three Categories mean ?—It will be seen that Peirce intended his Scientific Metaphysics to be judged as an exposition of his three categories. But even a Hegelian (who might share Peirce's *triadicism*) could not say that this volume makes their meaning clear. As universal categories, however, they ought not to be novel, and ought to be *recognisable* upon reflection. Peirce insisted on this in a letter to James : " It rather annoys me to be told that there is anything novel in my three categories ; for if they have not, however confusedly, been recognised by men since

men began to think, that condemns them at once " (1903, Perry, *op. cit.*, ii, 428). Two previously unpublished passages (189-237, dated 1899, and 338-348, dated 1909) seem to me particularly important as evidence of what he meant—and also of his difficulty in saying what he meant. *Firstness* is described in three different ways. It is " potentiality of this or that sort—that is, some quality " —that is, it is the realm of universals. But also it is Chance—" mere sporting " ; and again it is feeling—a simple unitary consciousness. Negatively it is described as not rational, general or continuous, but capable of being rationalised and generalised. *Secondness* is actuality, event, the vividness of reaction here and now. It too is feeling, but a feeling of contrast, connection : one feeling rising into consciousness and modifying a previous feeling ; achieving some possibility and excluding others. It is possibility become determinate and concrete. *Thirdness* is described as habit, order, law. It is a connection of actuals, hence of feelings, hence it is Generality. It is continuity, society, relation, sign (344). And it is essentially transitional, since law changes : Thirdness is Evolution.

These descriptions suggest most immediately the cosmology of Prof. Whitehead. (See especially his " Categories of Explanation " in *Process and Reality*, the paper on " Objects and Subjects " in *Adventures of Ideas* and chapter x of *Science and the Modern World*. These would, I think, have made a great appeal to Peirce.) But it is as if Peirce had confused together (as Firstness) both the indeterminacy of universals with the chance or random features of the concrete : that is, the Platonic *Unlimited* with the *Limits*. The Limits are indeterminate as to their ingression in actual objects, but are entirely *definite* in their (necessary) relations one with another. (*e.g.*, *Phaedo*, 102). The Apeiron seems, on the other hand, to stand for the fact that the inter-relations of concrete things *cannot* be stated quite definitely. Owing to this confusion of Peirce's it is hard to know whether we ought to " recognise " Firstness as Actuality (feeling) or as Possibility, and whether we ought to " recognise " Firstness or Thirdness as the Limits, the External Objects. The first confusion he himself seems to notice (217 ff.) : " A possibility, then . . . is a particular *tinge* of consciousness. I do not say the possibility is exactly a consciousness, a potential consciousness. However, the distinction is little more than verbal." It is in this context that he does seem to introduce a Fourth—the primitive origin and togetherness, in which anything might happen. I think his cosmology would have been more intelligible if he had developed this Fourthness : but perhaps the Hegelian triad really has a meaning that has quite escaped me.

Peirce and German Idealism.—Peirce's debt to Plato, Aristotle, and their mediæval followers is apparent : but he was perhaps even more influenced by Kant, Schelling and Hegel. He boasts that his *logic* is post-Kantian and post-Hegelian (226) : that is, the laws of the phenomenal world are *psychological*. But he holds—against

Hegel—that these laws are not narrowly rational, are changeable, and are *real* in the Realists' sense. To Kant's *ethical* writings, and to Schelling's inferences from them, Peirce also owes very much. It is only in action that we make the real world, and overcome the antinomy of freedom and determinism. It is in *effort* (said Schelling) that evolution comes about—in the effort of the knower and the artist as well as of the doer. And in this action we realise that the world is of one substance with ourselves. And this effort is evoked by Evil, and without it the world would die of inertia. Peirce wrote to James : " If you were to call my philosophy Schellingism transformed in the light of modern physics, I should not take it hard " (Perry, *op. cit.*, ii, 416). This " Schelling-fashioned Idealism " he drew partly from the American Transcendentalists of the 'fifties. (" I was born and bred in the neighbourhood of Concord—I mean in Cambridge.") His father frequently met Emerson at the Saturday Club in Boston in the days when Emerson, Thoreau, Alcott and Hawthorne had made their village the intellectual centre of New England.

" *Scientific Metaphysics.*"—It is possible, perhaps, to divide the teaching of this volume into three groups. First are hypotheses relating to one or more experimental sciences. These certainly refer us to observation for their support or refutation. But usually no *definite* experiments could be suggested which would prove the hypothesis superior to the many *rivals* that have been (or might be) formulated. The best example is his molecular theory of the formation of habits in protoplasm (275 ff.). These hypotheses would to-day be regarded as scientific but not metaphysical. Second are his practical beliefs, religious and social. It seems to me that he gives a good general account of such beliefs and defends their rationality and importance. His own particular beliefs naturally reflect the " intellectual climate " of his day and country : but some at least are of great and permanent value. Third are his categories and allied principles. These are certainly not (as Peirce said that they were) " observational ". We may regard them as clear and distinct ideas or as principles of the understanding or as principles of the syntax of any language used to convey information about the world. " My philosophy, and all philosophy worth attention ", wrote Peirce in 1897, " reposes entirely upon the theory of logic " (Perry, *op cit.*, ii, 419). But I do not think Peirce could ever have been persuaded to regard his categories as quasi-syntactical principles.

The editors are again to be congratulated warmly upon their thorough and highly skilful work.

KARL BRITTON.

The Great Chain of Being : A Study of the History of an Idea. The
William James Lectures, delivered at Harvard University,
1933. By A. O. LOVEJOY. Harvard University Press, 1936
(London : Humphrey Milford). Pp. ix., 392. Price in England,
17s. net.

" IT was in the eighteenth century," Mr. Lovejoy says, " that the
conception of the universe as a Chain of Being, and the principles
which underlay this conception—plenitude, continuity, gradation
—attained their widest diffusion and acceptance . . . Next to the
word ' Nature ', ' the Great Chain of Being ' was the sacred phrase
of the eighteenth century, playing a part somewhat analogous to
that of the blessed word ' evolution ' in the late nineteenth ". That
is the keynote of the present book, and Mr. Lovejoy, whose know-
ledge of the eighteenth century is even more extensive and precise
than his knowledge of any other, sets out to record the rise, the
zenith and the decline of this central conception of his favourite
period. The rise, indeed, was slow, and involved two millennia. It
therefore requires many pages from its commentator ; and although
the decline was more rapid it also needs a certain space. On the
whole, however, the preamble and the appendix are subordinate to
the central chapters and the central theme.

Since Mr. Lovejoy is studying the " history of an idea " he is
entitled to the privileges of that particular pursuit. In other words,
he is not bound to show that the idea as it shaped itself in so and
so's writings had such and such a provenance. His is a study in
metaphysical atmospherics rather than an account of the sources
deliberately studied by particular authors. The habitat of an idea
is very often in the air where its currents and cross-currents are likely
to be and to remain invisible, and Mr. Lovejoy's suggestion, I think,
is rather " This is a syndrome of a general presumption " than
" This precisely is what led to that ". On the other hand, his book
is most generously documented with passages seldom hackneyed
but never merely curious, and consequently is a mine of fascinating
information. In the mine the galleries that are still partially active
are not less interesting than the disused shafts.

According to Mr. Lovejoy the story begins with Plato, who had
two gods diametrically opposed to one another. On the one hand
Plato believed in a self-sufficing Perfection, on the other hand in a
self-transcending Fecundity. If the first were true, the second
would be pointless, for perfection, being perfect, cannot be bettered
by emanations from itself and indeed the totality must be spoiled
since the emanation, being necessarily less perfect than another god,
must always be an inferior supplement. [This would also be true
if creation were essentially a redemption drama.] Nevertheless,
Plato and the Platonists developed a theory of emanation or be-
coming with an eagerness not inferior to their worship of " other-
worldly " perfection. As the *Timaeus* says, " Being devoid of envy,

God desired that everything should be so far as possible like himself ". That is the principle of emanationism or, in the later scholastic phrase, the view that " omne bonum est diffusivum sui ". For Platonists it gives the *reason* for all becoming, and it becomes the principle of plenitude when it is pushed to its logical extreme. The more that emanates the stronger the proof that God is not jealous. Therefore maximum plenitude is enjoined with the sole limitation that there cannot be a second God.

Along with plenitude Mr. Lovejoy joins the notion of continuity (whose chief sponsor, he declares, was Aristotle) and the kindred principle of gradation. As Pope put it, " All must full or not coherent be, And all that rises rise in due degree ". The fuller elaboration of these ideas was more Plotinian than Platonic and was likened by Macrobius in the fifth century to " Homer's golden chain "—although the chain wasn't Homer's. Moreover, the work went on during the patristic, the prescholastic and the scholastic centuries. It was stimulated by Augustine [" non essent omnia si essent aequalia "] as well as by the pseudo-Dionysius, and Mr. Lovejoy has much to say in praise of Abelard, since that author, like Mr. Lovejoy himself, believed that the principle of plenitude logically implies " necessitarian optimism ". For the same reason Mr. Lovejoy severely criticises Aquinas for accepting the principle of plenitude [" God wills things to be multiplied inasmuch as he wills and loves His own perfection "] and yet denying necessitarianism. I think, however, that this part of Mr. Lovejoy's argument would have been more impressive if he had not ignored Aquinas's distinction between liberty of election and liberty of indifference. So far as I can see, Mr. Lovejoy, in the passages he quotes, succeeds in convicting Aquinas only of one contradiction, and that quite a different one. For Aquinas admits that God could have made a better world, which would be impossible if the creation were in full accord with the principle of plenitude.

In his fourth chapter on " Plenitude and the New Cosmography " Mr. Lovejoy makes a nearer approach to his central theme. Indeed he treats of certain matters down to the time of Kant. He begins by exploding certain prevalent fallacies. The universe of the fifteenth century, he shows, was a walled but not a small affair, even if it was ignorant of the " astronomical " figures that are now so glibly given. Again, man's supposed centrality on geocentric assumptions " served rather for his humiliation than for his exaltation ". His earth was at the greatest distance from the pure incorruptible walls of the cosmos and was in fact supposed to be " a dim and squalid cellar of the universe ". Again the heliocentric hypothesis (for which Kepler, according to our author, was responsible rather than Copernicus) did not greatly alter the standards of those who had " a classical taste in universes ". What was much more unsettling was an *acentric* view. Bacon said as much and Cusa took the theory (and with it the staggering problems of infinity and

relativity) seriously, although always in the service of his *docta ignorantia*. But Bruno was "the principal representative of the decentralised, infinite and infinitely populous universe"; and Bruno is one of Mr. Lovejoy's heroes and the immediate precursor of the theodicy-mongers. Bruno's attitude, indeed, was very largely the attitude with which Mr. Lovejoy's entire essay is concerned. "Why should or how can we suppose the divine potency to be idle?" "Because of the countless grades of perfection in which the incorporeal divine excellence must needs manifest itself in a corporeal manner, there must be countless individuals such as . . . the Earth." "Whatever is small, trivial or mean serves to complete the splendour of the whole." Although Descartes, according to Mr. Lovejoy, had probably the greatest direct influence upon the late seventeenth- and eighteenth-century speculations upon the plurality of inhabited worlds and the problems of infinity, Bruno illustrates the change-over from mediævalism more precisely. Infinity plus plenitude became a heady metaphysical brew. It was fitted indeed to inculcate man's insignificance, and Descartes, among others, so interpreted it. The human spirit, however, evolved compensatory "rationalisations". Hence the paradoxical result that "it was not in the thirteenth century but in the nineteenth that *homo sapiens* bustled about most self-importantly in his infinitesimal corner of the cosmic stage".

Leibniz was a greater philosopher than Bruno. He was also the chief exponent of an optimism of plenitude, and his views are a sort of standard "control" of Mr. Lovejoy's interpretation of the Chain of Being. "Among the great philosophic systems of the seventeenth century," Mr. Lovejoy says [and Leibniz survived that century], "it is in that of Leibniz that the conception of the Chain of Being is most conspicuous, most determinative and most pervasive. The essential characteristics of the universe are for him plenitude, continuity and linear gradation." Mr. Lovejoy, however, is chiefly concerned with the relation between Leibniz's principle of sufficient reason on the one hand, and the Great Chain of Being upon the other. In debating this question he allows himself several excursions into the views of other authors, but in the main he is concerned to show that Leibniz ought logically to have been a necessitarian (there being no intelligible meaning in an inclination that does not necessitate), that the sufficient reason (for existence) is ultimately an *exigentia essendi* inherent in every essence, and that the limitation to compossibles instead of mere possibles is a minor consideration. "A mere possible is a thing frustrate," Mr. Lovejoy explains: and the principle of plenitude does the rest. As Leibniz himself said, "From the conflict of all the possibles demanding existence, this at once follows, that there exists that series of things by which as many of them as possible exist; in other words, the maximal series of possibles"; and, again, "the actual universe is the collection of the possibles *qui forment le plus riche composé*". Furthermore,

" Just as there is no vacuum in the varieties of the corporeal world, so there is no less variety among intelligent creatures ".

With these explanations Mr. Lovejoy's story reaches its high noon in the eighteenth century, and it is here that the passages I quoted at the beginning of this review occur.   The situation is surveyed in successive chapters upon eighteenth-century thought and eighteenth-century optimism, with a supplementary chapter concerning biology. The later chapters describe how the conception ran almost literally to romantic seed.

Quotations from Addison and from Edmund Law enforce the moral that has already been made so abundantly plain.   According to Addison, " Had God made only one species of animals, none of the rest would have enjoyed the happiness of existence ; he has therefore *specified* in his creation every degree of life, every capacity of being ". And Law said the same.

Mr. Lovejoy is more concerned with the twists and turns the idea took once it may be said to have become established, and his comments abound in varied interest.   As he shows, the metaphysical necessity for the chain was really an argument against man's hegemony in nature—for the Whole was the thing, and not any particular link in the chain.   He also shows that this consequence was not invariably disregarded.   Again, if man occupied an intermediate link in the chain, he had no particular reason for vaunting himself.   Indeed, as Mr. Lovejoy shows by citing Addison, Bolingbroke and some others, it was quite commonly held that the grades of intelligent beings above man were more numerous than the grades below.   [The trouble, of course, was to find empirical corroboration of these majestic conceits, at any rate in the neighbourhood of the terrestrial ball ; but Kant in 1755 cheerfully concluded that it was very nearly certain that " the entire extent of the perfection of thinking natures became more and more complete in proportion to the remoteness of their dwelling-place from the sun ".]   Further, although man was the highest inhabitant of the earth, the principle of gradation prevented any abrupt division between him and his animal kindred.   " What thin partitions sense from thought divide " was one of the things Pope said ; and Soame Jenyns, much read in his time, remarked that " animal life rises from this low beginning in the shell-fish, through innumerable species of insects, fishes, birds and beasts, to the confines of reason, where, in the dog, the monkey, the chimpanzè, it unites so closely with the lowest degree of that quality in man, that they cannot easily be distinguished from each other ".   And lastly a metaphysics of man's ineluctable mediocrity was readily interpreted as an injunction to mankind to remain mediocre.   According to Jenyns, " God cannot instruct a mole in astronomy or an oyster in music ".   By the same logic men of lowly station should not attempt to change their rank or their lot.

The relation of these ideas to " optimism " is at least of equal interest.   To us, looking back, it seems perfectly plain that if per-

fection means fullness, and if the best is simply the fullest, neither optimism nor meliorism in their ordinary senses need be so much as suggested. By " optimism " we usually mean the doctrine that virtue, happiness and beauty must preponderate over vice, wretchedness and ugliness. That is a doctrine of selection, not a doctrine of plenitude. Existence is the fuller if it contains sin, misery and aesthetic eyesores. It does not even follow from the premises that the whole mass should be a paradise although every part of it is full of vice. Again, by meliorism we mean a qualitative improvement of reality in respect of happiness, virtue and beauty ; and eternal plenitude, whether or not it is interpreted statically, gives no hint of such a rosy future. These things, indeed, are so very clear that they have only to be stated to be seen. Mr. Lovejoy's narrative, however, has the great merit of showing in detail how this grim type of " optimism " was accepted, although not without sundry qualms, by King, Law, Leibniz and others. Thus King said, " If you say, God might have omitted the more imperfect beings, I grant it, and if that had been best, he would undoubtedly have done it. But it is the part of infinite goodness to choose the very best ; from thence it proceeds, therefore, that the more imperfect beings have existence ; for it was agreeable to that, not to omit the very least good that could be produced. Finite goodness might possibly have been exhausted in creating the greater beings, but infinite extends to all ". On the other hand, it seems to me to be misleading to say with Mr. Lovejoy that this type of " optimism " implies that " the desirability of a thing's existence bears no relation to its excellence ". The trouble comes from identifying perfection with fullness, and then holding that perfection alone is excellent and alone is desirable. In short, there is simply a failure to detect an ambiguity in the word " perfection ".

Mr. Lovejoy's chapter upon eighteenth-century biology contains interesting quotations regarding the " missing link " and other attempts of the century to show how the maxim that Nature does nothing *per saltum* should be interpreted in a biological sense. I must hurry on, however, to his account of the decline of the theory of plenitude, and here the beginnings are made with his chapter upon " temporalizing the chain of being ".

Mr. Lovejoy obviously believes that the logic of the theory was on the side of those who held that plenitude was immutable, and, with rather less plausibility, his comment is " perfectly rational and perfectly hopeless ". The idea, however, that the scale of nature was a ladder to be climbed also made its appearance before and during the eighteenth century, and romanticism came hard on its heels. Addison, for example, piously remarked that the " Cherubim which now appears as a God to a human soul, knows very well that the period will come about in eternity, when the human soul shall be as perfect as he himself is now ", and the idea of the inevitableness of gradual creative advance won a good deal of recognition. Leibniz

had said that rational souls " advance and ripen continually, like the world itself, of which they are but images ". Akenside as well as Kant believed in temporal advance. [As Akenside wrote, " In their stations all may persevere, To climb the ascent of being, and approach, Forever nearer to the life divine ".] Similarly Robinet gave illustrations (sometimes fantastic) in support of the view that a single stock, given infinite time, might engender an infinity of variations.

Such opinions may have lengthened the life of the theory, despite Voltaire's criticism of the entire conception (on the ground that Nature *does* make leaps) and—this is still more interesting—the highly dialectical arguments of Dr. Johnson in his review of Soame Jenyns to the effect that in true plenitude there must be an infinity of grades between any two points, however near, that may be chosen in an infinite series—and hence that current interpretations of the principle of plenitude are absurd. But when romanticism invaded the conception of plenitude, the principle of infinite diversification began to oust all the others, and a diversitatarian plenitude became a straggling and a formless thing. Mr. Lovejoy pursues this theme in an account of Schiller, Schlegel and Schleiermacher. Remembering, in due season, to honour William James, he concedes a certain " benignity " to the movement.

The climax, he goes on to say, came with Schelling's view that God himself was in the making, and the moral, according to Mr. Lovejoy, is that the " two gods of Plato cannot both be believed in " and that " a world of time and change is a world which can neither be deduced from nor reconciled with the postulate that existence is the expression and consequence of a system of ' eternal ' and ' necessary ' truths inherent in the very logic of being ". He concludes with the suggestion that there is greater hope for theism in the idea (rather tentatively credited to Whitehead) that God is a " principle of limitation " than in the " infinite fecundity of emanationism ".

These lessons are perhaps too easily drawn. If the Great Chain of Being be dissolved to-day, the relations between time and eternity are still the object of modish discussion and will not be silenced by the biography of a dead idea. On the other hand, this is a very good biography, and would be little the worse if the death of its subject were an exaggerated report. I have attempted, in a sketchy way, to give a rough indication of the landscape through which Mr. Lovejoy has conducted his readers, but the detail is even more engrossing. In short, the book is what a book should be—very good to read.

JOHN LAIRD.

Contemporary Indian Philosophy (Library of Philosophy). Edited
by S. RADHAKRISHNAN, D.Litt., and J. H. MUIRHEAD, LL.D.,
F.B.A. London : George Allen & Unwin, Ltd. Pp. 371.
Price 16s.

THE purpose of the editors in compiling this recent addition to the
Library of Philosophy was to acquaint the Western world with the
nature and value of the philosophic activity that is going on in India
at the present moment.   To that end, fourteen of the most important
Indian thinkers were invited to give brief statements of their philo-
sophic views and, if possible, of the history which led up to them.
The task of selection imposed upon the editors cannot have been an
easy one, for they have had to bear in mind the interests of the
English public as well as the intrinsic worth of each philosopher's
work.   For that reason, the first two contributions are not by men
who are in any sense professional philosophers, but rather leaders of
national life.   It is with regret that one notes the absence of any
contributions from Moslem and Christian India, though the former
deficiency at least is not due to any fault on the part of the editors.

The resulting volume is one which cannot be neglected without real
loss by anyone whose main interest lies in pure metaphysics or the
philosophy of religion.   On the other hand, it is undeniable that in
some places it makes very difficult reading, so that those unacquainted
with the Vedantic tradition may require patience and sympathy to
carry them to the end.   For this reason, I believe that the best
service I can render to the potential reader is to suggest a convenient
order in which the essays should be read, and then to comment on
certain peculiarly Indian doctrines which keep recurring throughout
the whole book.

The book begins with a serviceable introduction by Prof. Muirhead,
after reading which it seems best to begin with the three more or
less orthodox expositions of Vedantic philosophy by Mr. Swāmi
Abhedānanda, Mr. Subrahmanya Iyer and Mr. Bhagavan Das.   The
first of these gives a succinct account of the chief ideas of the Vedānta,
such as *Nirguna* and *Saguna*, the ascent from the dualistic conception
of *Ātman* and *Brahman* to the purely monistic one, the Four *Yogas*
and *Karma*.   Mr. Iyer's essay centres round the conception of
Māya (usually translated ' illusion ') and the distinction between the
three states of the soul—waking, dreaming and sleeping.   To my
mind, this is a very eloquent exposition of a way of regarding the
relation between conscious and unconscious mental states, that
deserves attention from Western philosophers.   Mr. Bhagavan Das's
essay on *Ātma-Vidyā or the Science of the Self* is longer and more tech-
nical, but his account of Hindu social ideas is extremely interesting.

The second triad that I would distinguish consists of what are
really contributions to the philosophy of religion.   Mr. Coomaraswamy
(*On the Pertinence of Philosophy*) begins in true Aristotelian fashion
by distinguishing the different kinds of knowledge and wisdom,

the highest of which he regards as an attempt to discover what is common to the different religions as a foundation to a rational metaphysic. He gives an instance of his method by applying his great learning and considerable acumen to a comparative study of the idea of immortality. The general outlook of Sir S. Radhakrishnan (*The Spirit in Man*) is similar, though his temper is more practical. He begins with a penetrating analysis of the philosophic background of modern life and makes an ingenious attempt to reconcile Theism and Absolutism, which owes something to both Lotze and Hegel. Prof. Wadia (*Pragmatic Idealism*) rejects both Theism and Absolutism because they give no explanation of the existence of evil ; he therefore favours the pragmatic creed that we should strive to deliver ourselves from it, knowing that there is a ' something not ourselves that makes for righteousness.'

After these one would naturally pass to Prof. Das Gupta's *Philosophy of Dependent Emergence*. The title is well-chosen, for it accurately describes the somewhat ' hydrated ' Western metaphysic to which the learned historian of Indian Philosophy has given his allegiance. Prof. Hiriyanna's essay on *The Problem of Truth* is a very patient effort to find an unexceptionable criterion, leading up to a philosophy of perspective. Mr. Haldar's *Realistic Idealism* is rather hard to distinguish from the orthodox variety of Absolutism that so long haunted the banks of the Isis and the Clyde, though he refuses to commit himself to pure mentalism.

Epistemological problems are the central points in *The Concept of Philosophy* by Prof. Bhattacharyya and *Common-sense Empiricism* by Prof. Chatterji. The first has something important to say about symbolism ; but his technical terms are many and badly chosen, and I cannot profess to have grasped more than the outlines of his thesis. The second explains why he cannot accept the epistemological basis of idealism and goes on to expound a very orthodox realism. Experience, he thinks, shows us a hierarchy of being— Nature, Mind and Value—in whose maintenance we are vitally interested. He concludes with an eloquent passage that might have slipped from the pen of the author of *Mysticism and Logic*. "What if we ourselves are mortal, our laughter but the prelude of tears, love's brief transport the herald of approaching doom, and beauty but the echo of a dying song ? " What of it indeed, when we can always indulge in ' a suspense of judgment about final issues,' which is ' the cardinal dogma of our religion ' ! *Rusticus expectat dum defluat amnis.*

Prof. Ranade's sketch of the development of his own thought is, I think, the most original of the contributions. His practice is to reach truth by a critical interpretation of the great philosophers, and he gives a few specimens of his method. These clearly indicate interpretative genius of a very high order, as witness his cogent criticism of Zeller and Burnet on Parmenides and his comments on the Upaniṣadic theories of self-consciousness.

The contributions of Mr. Gandhi and Sir Rabindranath Tagore ought to be taken last, for these men represent the ethical and artistic vanguard of a movement whose origins lie as much in the world of philosophy as in that of politics.   If we try to understand the ideals first, we may find it easier to understand the men.   Tagore's essay is an excellent illustration of his mastery of the English language.

The general impression left by the volume is that philosophy in India is a good deal more preoccupied with personal and religious problems than in the West.   For this reason, it leans markedly towards the sort of Absolutisms which Hegel and Lotze introduced to the West.   Those who incline towards a more realist philosophy, though they include thinkers of great ability like Profs. Dasgupta and Chatterji, seem to be more or less conscious rebels against an accepted tradition.   That tradition is in the last resort the Vedānta as interpreted by commentators on the *Upaniṣads*, such as Śaṇkara and Rāmānuja, and certain ideas from it are the stock-in-trade of Indian thought.

Among these must be singled out first the distinction between *Nirguṇa* and *Saguṇa*.   *Nirguṇa* is *Brahman* considered as beyond all possible attributions, while *Saguṇa* is *Brahman* considered as the predominating factor in the world process and the object of worship, under various guises, of the historical Hindu religion.   For the educated, this distinction seems to have changed Hinduism from a religion into a philosophy of religion, in much the same way as the Christian Platonists tend to reduce Christianity to a popular embodiment of Platonic principles.   Some such crisis is, of course, latent in every systematic religion.   In the West, it presented itself in the theory of the two kinds of truth and it required the whole efforts of mediæval philosophy to overcome it.

The second idea that deserves special attention is that of *Māya*, which is usually translated as ' illusion '.   *Māya* is opposed to the ultimate reality as ' concealed ' in the Absolute (*Brahman*) and the Self (*Ātman*) ;   in fact, it seems to mean very much what Western Philosophers mean by the phenomenal world.   The interesting thing is that Vedantic philosophy should lay so much stress on the relation of this to the three states of the Self.   To free ourselves from *Māya*, we must reduce the waking world to the dreaming, and this in its turn to pure unconsciousness, in which field intuition, as opposed to intellect and reason, is active.   Hence the goal of finite centres is the absorption of conscious into unconscious states.

Hence emerges another central idea of Indian philosophy—that of a super-conscious state to be attained by different disciplines (*Yogas*).   Of these the best known is *Rāja Yoga*, by means of which mystical trances are achieved which are anticipations of that last state (*Guhyam padam*) in which the release of the soul from illusion is reached.

Now, it is patent that few souls come anywhere near release in this present life, and from reflections upon these facts, the doctrines

of re-incarnation and *Karma*, the law of spiritual causes, naturally emerge. The doctrine of *Karma* is a difficult one, but two aspects of it seem quite straightforward.

(1) It is a law of the conservation of spiritual energy, whose operations are not confined to human society. *E.g.*, it is because of this law that suffering is believed never to be in vain.

(2) It is a principle of desert, whose operations are not limited to a single lifetime of the individual.

While not denying that there is some such principle, it can hardly be taken to be of great practical significance, unless its application is more strictly limited. Are any such limits metaphysically possible ?

The doctrine of re-incarnation, which MacTaggart has now made familiar to the West, has one fatal defect, *viz.*, that it can give a plausible explanation and justification for anything. If one asks whether it is right to relieve suffering, there will always be two answers according as to whether one looks at it from the point of view of the agent, whose effort is praiseworthy, or the patient, whose soul is being released from *māya* by suffering. And this is bound to suggest yet a third answer, that it doesn't matter what you do ; which is, I suppose, the source from which there springs up that cynical outlook which Prof. Radhakrishnan deplores in the youth of both East and West.

Whether this be a just inference or not, there is evidently little trace of cynicism in the works of the chief Indian philosophers, who breathe a very rare atmosphere of intellectual and social endeavour. If one sometimes feels that the ideals are too abstract and the standards too vague, it is certainly not for English philosophers to cast the first stone. Perhaps mutual criticism will produce more positive results.

ARTHUR T. SHILLINGLAW.

VII.—NEW BOOKS.

Religion and Reality, an Essay in the Christian Co-ordination of Contraries.
By MELVILLE CHANING-PEARCE.   London: Macmillan & Co., Ltd.,
1937.   Pp. xiv + 190.   7s. 6d. net.

FOR all its shortcomings, this is an interesting, and even an impressive,
book ; for it is the record of the religious experience of one who writes
with deep sincerity and who possesses no ordinary gifts of mind and
personality.   The author avowedly disclaims any title to be either a
philosopher or a theologian, qualifying his disclaimer somewhat incon-
sistently by hard censures, as when he speaks of the " long tyranny of
logic " and of the " abstractions " and " jargon " of theology ; yet he has
read widely and trained himself in the school of life to think with inde-
pendence on high speculative subjects.   He describes his book as " *au
fond*, a dialogue between the sceptic and the Christian within me, a com-
bat *à l'outrance* in which, to the best of my knowledge and ability, no
quarter has been given or taken ; my utterances are, therefore, uttered
in the main to myself and for myself, and are correspondingly blunt and
uncompromising" (xii).   It is "addressed by a 'common man' to 'common'
men and women " (xiv).   Both the matter and the style, which is repetitive
and unpolished, are calculated to stimulate and convince such an audience.
They will feel, and rightly, that here is one who has reached a belief in
Christianity as the outcome of his personal endeavour, and has a message
of significance for those who are wrestling with the same intellectual and
practical difficulties.

The author's allegiance is to what he calls (with apologies for his own
usage of the term) an ' existential ' Christianity, *i.e.*, " a Christianity
gauged by its correspondence, not with theological ' summas ', but with
life as the ordinary man of the world knows it " (ix).   The reason of his
argument is contained in the second and sixth chapters, on " Existential
Judgement " and " Christianity and Life " respectively.   By an " ex-
istential Judgement " he means the response of a man's entire personality
to " the imperative demands of life ", in which " there is no absolute
break between apprehension and judgement and judgement and act, and
there is no division in the judging consciousness ", a pragmatic " surrender
of the consciousness to reality ", issuing " in faith and conviction in con-
trast to opinion and probability " (30).   This type of judgement, which
may be illustrated by the " good sense " of men of affairs and by the
manner in which æsthetic intuition passes over into æsthetic creation,
stands in sharp opposition to the " logical judgement " which is detached
from practical requirements and expresses purely theoretical truth.   Here
we have one example of the dualism with which life confronts us, both
inwardly and without.   " Two and two, one against another ; masculine
and feminine, Mind and Heart, Aristotelian and Platonist, conservative
and liberal, classic and romantic, catholic and protestant, priest and

prophet " (113-114, *cf.* 6, 169): these " contraries ", piled together with characteristic brusqueness, form a problem, irresolvable for the logical judgement, which finds a solution only in the " co-ordination " or synthesis (which ?) of " existential " Christianity.

Such a theme as this hardly lends itself to extended discussion in MIND and, leaving on one side the central religious issues, we confine ourselves to a criticism of a general principle, which is relevant both to religion and to philosophy. The author identifies reason throughout with the activity of logical ratiocination, contrasting it now with faith, now with intuitive vision ; adjusting himself herein to the usage of the plain man, but seriously prejudicing both his argument and the task of its solution. On the one side, the antitheses presented by life (*e.g.*, the sex-problem and the Christian call to hate life, discussed in chap. ix), are exaggerated to the point of paradox ; on the other, the Christian reconciliation can only be shown effectual by allowing to natural desire a potency of response to the supernatural. " Over against the pole of physical life with its law of evolution and ἔρως fulfilment, is the pole of metaphysical being with its law of return and rebirth and reign of self-loving ἀγάπη " (164). For Mr. Chaning-Pearce the " breaking-through downwards " from above is stressed to the almost complete exclusion of the correlative factor of the " breaking-through upwards " that is natural to man. He owes much to Pascal ; and his debt is most evident in his exaggeration of the one-sidedness of that great writer. The needed correction is furnished by the central Catholic tradition, as embodied in the medieval *Summae*, which the author so rashly sets in contrast to the testimony of personal experience. What, after all, is theology but *fides quaerens intellectum*, the ripe fruit of the religious experience of the Christian community, clarified by thought ? A closer study of that tradition would have revealed to him a truer conception of intellectual " wisdom ", and have saved him, for example, from speaking of " the illogical and irrational pattern of reality which Christianity depicts " (119). It would have saved him also from coupling von Hügel with Karl Barth as representatives of the dualism of faith and reason (4), and of talking of those who have " pawned their reason to fundamentalism or Rome " (126, *cf.* 4). Has not Dr. Whitehead, to whom Mr. Chaning-Pearce makes acknowledgment in his *Preface*, shown how the rationalism of the seventeenth and eighteenth centuries was but an attenuated fragment of the thorough-going rationalism of the Middle Ages ? ' Non in dialectica voluit Deus salvum facere populum suum.' It is right to lay all emphasis, as does the author, on this cardinal truth ; but it is far from helpful, above all in the present age of perplexity, to fall back on the alternative of a faith in irrationality, on a plunge into obscurantism which is equally untrue to Christianity and to life.

W. G. DE BURGH.

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VIII.—NOTES.

AN EPISTEMOLOGICAL APPROACH TO THE SPECIAL THEORY OF RELATIVITY.

In my article with the above title which appeared in the last number of MIND, I showed that the identification of the light-tracks in a conventional two-dimensional space-time scheme (analogous to that of Minkowski) with the circular lines in the ideal euclidean plane furnishes the key to all the paradoxes of the special theory of relativity. It may be noticed that this identification leads to a result which is not without some interest in view of the theories proposed bearing on the dual (" wave-particle ") character of light.

Referring to our earlier representation,[1] we find that the law of propagation of rays of light from O must in the ideal euclidean plane be expressed by the equation of the pair of circular lines through O :

$$x^2 + t^2 = 0.$$

The differential form of this equation, which is invariant for all changes of rectangular axes, is

$$\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial t^2} \right) \psi = 0,$$

where ψ represents the light vector and is a function of x and t.

When we pass to the Minkowski configuration (which fulfils the mathematical demand for a representation of the light-tracks by imaginary lines without discarding laboratory data), we have to change t into $\pm \frac{c}{i} t$ and express the law of propagation of light in the form :

$$\left(\frac{\partial^2}{\partial x^2} - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \right) \psi = 0.$$

The fact that the last equation has a physical significance which is well known [2]—viz. that any element of a light-wave (here supposed to be plane) is propagated normally to itself with velocity c—justifies our ascribing epistemological " relevancy " though not " reality " to the dual representation of the circular lines through O as the point circle $x^2 + t^2 = 0$ and as the pair of imaginary straight lines $x \pm it = 0$.

The paradox (to which reference was made in our earlier representation [3]) that the relativistic formulation of the " wave character " of light makes the light-wave appear independent of x and t (conventionally defined

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[1] MIND, N.S., No. 182, p. 169, et seq.
[2] Cf. L. Silberstein, The Theory of Relativity, p. 113.
[3] MIND, loc. cit., footnote, p. 174.

space- and time-co-ordinates) issues directly from the considerations advanced in the preceding paragraph. The equation for a system of waves satisfying the differential equation

$$\left(\frac{\partial^2}{\partial x^2} - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\right)\psi = 0$$

may be assumed in the form

$$\psi = \psi_0 \cos 2\pi\,(x - ct)$$

which, as already explained, reduces to

$$\psi = \psi_0.$$

This is scarcely a matter for surprise when we remember that in the ideal euclidean plane each of the lines $x = \pm\, it$ is self-orthogonal and that, consequently, in the Minkowski configuration, each of the lines $x = \pm\, ct$ is self-conjugate with respect to the hyperbola $x^2 - c^2t^2 = -\,c^2\mathrm{T}^2$. Since a pair of conjugate lines through O consists of a space-axis and a time-axis, it follows that the distinction between space- and time-co-ordinates cannot be affirmed with respect to a self-conjugate line through O; in other words, " *at the boundary velocity space and time vanish* ".[1]

<div align="right">C. T. Krishnama Chari.</div>

[1] F. W. Lanchester, *Relativity*, Section 47.

ERRATA.

In the article entitled " An Epistemological Approach to the Special Theory of Relativity " in the last number of MIND the following corrections should be made :—

> p. 162, line 29, for " time-dimensions " read " time-dimension ";
> p. 168, footnote 1, for " C. L. S. Hatton " read " J. L. S. Hatton ";
> p. 173, footnote, line 6, for " X = c " read " x = c ".

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